617.7.05

Chmg
11

DOMINA RERUM SAPIENTIA

Library
of the
Academy of Medicine,
Toronto.

3191

Presented by

1916

THE

AMERICAN JOURNAL

OF

OPHTHALMOLOGY.

VOLUME XI, 1894.

ST. LOUIS, MO.:
J. H. CHAMBERS & CO., PUBLISHERS, 914 LOCUST ST.,
1894.

LIBRARY
JUN 20 2002
UNIVERSITY OF TORONTO

INDEX TO VOL. XI.

AUTHORS.

ORIGINAL ARTICLES.

Alt, A., II, 32; V, 141
Ayres, S. C., V, 129
Chisolm, J. J., III, 183
Cole, W. J., III, 71
Culbertson, L. R, V, 133; VII, 197; VIII, 225; X, 294
Dunn, J., I, 7
Hobby, C. M., III, 65; VI, 180; IX, 261
Johnson, W. B., I, 1; VI, 161
Kyle, J. J., XI, 325
Landman, O., VI, 175
Murrell, T., IV, 97
Pooley, T. R., III, 89
Theobald, S., VII, 228
Weyman, M. P., X, 289

SELECTIONS FROM MEDICAL JOURNALS.

Ayres, S. C., II, 63
Buller, F., XI, 327
Carpenter, J. F., VI, 184
Claiborne, J. H., VIII, 246
Dejerine and Vialet, IV, 126
DeSchweinitz, G. E., I, 29
Dresel, G., II, 52
Editorial *Therapeutic Gazette*, VI, 188
Fleet, Frank van, XII, 366

3131

FRANKHAUSER, F. W., - - - - - - - - - XI, 352
HOBBS, A. G., - - - - - - - - - - VIII, 253
HOTZ, F. C., - - - - - - - - - - - IV, 119
HOWE, L., - - - - - - - - - - - I, 20
LAUTENBACH, L. J., - - - - - - - - - II, 65
LEE, B., - - - - - - - - - - - - X, 306
LYDSTON, J. A., - - - - - - - - - II, 40; X, 315
MCGUIGAN, J. I., - - - - - - - - - - V, 143
MARLOW, F. W., - - - - - - - - - - VI, 191
MORTON, T. G., - - - - - - - - - - V, 147
PANAS, PROF., - - - - - - - - - - XI, 345
PHILLIP, S. L., - - - - - - - - - - V, 156
RANNEY, A. L., - - - - - - - - - - II, 58
SCHNEIDEMAN, J. B., - - - - - - - - - V, 152
SMITH, H. W., - - - - - - - - - - XI, 337

TRANSLATIONS.

GILLET DE GRANDMONT, - - - - - - - - IV, 99
GILBERT SOURDILLE, - - - - - - - - - IV, 101
THEODORE LEBER, - - - - - - - - - - XII, 357

CORRESPONDENCE.

CULBERTSON, L. R., - - - - - - - - - VI, 182
HOBBY, C. M., - - - - - - - - - - II, 38

NEWS AND EDITORIAL NOTICES.

NEWS, - - - - - - I, 32; II, 64; III, 96; IV, 103; VI, 183
REVIEWS, - - - - - - - - IV, 128; V, 159; XII, 385

OBITUARY.

ANTONIO QUAGLINO, - - - - - - - - - V, 160
HERMANN VON HELMHOLTZ, - - - - - - X, 321
LUDWIG MAUTHNER, - - - - - - - - - XII, 386

SOCIETY PROCEEDINGS AND NOTICES.

American Ophthalmological Society, IV, 104; VII, 206; VIII, 228
American Medical Association—Section of Ophthalmology, IV, 105
British Medical Association—Section of Ophthalmology, IV, 107, XI, 334
Eighth International Ophthalmological Congress, II, 39; IV, 108; IX, 273; X, 296
International Medical Congrees, I, 32
Ophthalmological Society of the United Kingdom, I, 17; IV, 115; IX, 263
San Francisco Eye, Ear, etc., Surgeons, IV, 110

SUBJECTS OF THE ORIGINAL ARTICLES.

Amblyopia from suppression of visual image, I, 1
Concerning exophoria, I, 7
On subconjunctival injections as a therapeutic measure, II, 33
Does byperopia bear a causative relation to strabismus? III, 65
Corneal transplantation, III, 71
Analysis of the sixteenth annual report of the Presbyterian Eye, Ear and Throat Charity Hospital of Baltimore, III, 83
The action of the hydrochlorate of Scopalamine on the eye, III, 89
A congenital iris band across the papillary space, IV, 97
Visible circulation in retinal vessels with thrombosis of the central vein, V, 129
Albuminuric neuro-retinitis in pregnancy, and its treatment, V, 133
A case of puerperal albuminuric neuro-retinitis with enormous amount of exudation. Recovery, V, 141
Foreign bodies in the orbital cavity, VI, 161
Headaches, VI, 175
Ocular gymnastics, VI, 180
A case of panophthalmitis snppurativa following discission of a capsular opacity, VII, 193
Can albuminuric retinitis in pregnancy be prevented? VII, 197
Report of a case of unilateral facial and orbital œdema and exophthalmus of nephritic origin, VIII, 225
Note on lid pressure as a cause of astigmatism, IX, 257
Albuminuric retinitis, IX, 261
A case of quadrisectoral homonymous hemianopsia, X, 289
Report of a case of neuro-paralytic keratitis from injury to the temporal bone, X, 294

A case of gumma of the sclerotic, - - - - - - - XI, 325
The present status of asthenopia, - - - - - - - XI, 327

SUBJECTS OF TRANSLATED AND SELECTED ARTICLES.

Legislation in the United States for the prevention of blindness, - I, 20
Concerning mild conjunctival inflammations and their local treatment, I, 29
A petrified eye, - - - - - - - - - - II, 40
The treatment of various forms of conjunctivitis as practiced at the German Hospital, Philadelphia, - - - - - - - II, 44
Ophthalmoplegia, - - - - - - - - - - II. 52
The eye treatment of epileptics, - - - - - - - II, 58
The treatment of blepharitis ciliaris by hydrogen dioxyd, - - II, 63
Therapeutic value of weak lenses, - - - - - - - - IV, 119
Localization of pure word-blindness, - - - - - - IV, 126
Pannus, - - - - - - - - - - - - - V, 143
Pistol-ball wound of the brain dividing the left optic nerve in the optic foramen. Meningitis. Autopsy, - - - - - - V, 147
A case of spontaneous absorption of a cataract, - - - - V 152
Persistent pupillary membrane associated with atrophy of the choroid and optic nerve, - - - - - - - - - - V, 156
The causation of transient increase in the refraction of the eye during iritis - - - - - - - - - - - - VI. 184
The treatment of membranous and diphtheritic conjunctivitis, - VI, 184
A case of retinitis pigmentosa with extreme contraction of the visual fields and without night-blindness, - - - - - - VI, 191
A case of quinine amaurosis, with remarks, - - - - - - VIII, 246
The treatment of pterygia with the galvano cautery, - - - VIII, 253
The prevention of blindness, etc., by sanitary legislation, - - Y, 306
Interdependence of ocular affections, - - - - - - - X, 313
The present status of asthenopia, - - - - - - - - XI. 327
Scopalamine, its valne in ophthalmic practice, - - - - XI, 337
Influence of general maladies upon the organs of vision, - - - XI, 345
Electricity in hemorrhage into the eyeball, - - - - - - XI, 352
Penetrating wounds of the epeball due to pieces of copper, and their treatment, - - - - - - - - - - - - XII, 357
Defective vision in its relation to crime, - - - - - - - XII, 366

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. JANUARY, 1894. NO. 1.

ORIGINAL ARTICLES.

AMBLYOPIA FROM SUPPRESSION OF THE VISUAL IMAGE.[1]

BY WALTER B. JOHNSON, M.D., PATERSON, N. J.

At the last meeting of the American Ophthalmological Society, July, 1893, a case of "Suppression of the Visual Image" was reported in which the fixing eye which had normal vision was lost by accident. The squinting eye which was amblyopic with vision of fingers at 6″ gradually resumed its functions, and nineteen days after the accident regained the normal acuity of vision.

The conclusions were, that in the case reported the amblyopia was not due to structural changes either in the eyeball or nerve centers but to continued suppression of the visual image induced by convergence of the visual lines probably induced by an hypermetropia. The case here reported is another evidence of the existence of amblyopia exanopsia and clearly indicates that the amblyopic eye does not enter into the visual act even though the eye may be successfully operated upon, and that although it does not resume its functions while the fellow eye is still selected for use, it has the ability to, and does return to its normal condition immediately after the loss or destruction of the fixing eye. The confusion of images, caused by the mental impression of sight in the formerly fixing but now cataractous eye in the case reported, indicates the persistence of mental impressions and explains why continued closure of a fixing eye in strabismus cases does not result in any material improvement in the vision of the amblyopic eye, the mental impression of the ability to see with the covered eye preventing the amblyopic eye from assuming the function of sight.

---

[1] Read at the November meeting of the New York Academy of Medicine, Section on Ophthalmology and Otology.

The fixing eye being almost invariably chosen to continue the visual act, the squinting eye not only has no stimulus to increase its power of vision but is deterred from resuming visual acuteness by the cerebral centers even if the visual lines have been paralleled by operation, because of the confusion of images accompanying any effort at vision.

The cerebral centers having lost the conscious activity of the visual functions from continued suppression, generally remain in that condition in preference to re-establishing binocular fixation with its attendant confusion and discomfort.

The persistence of the hypersensitiveness of the eccentric portion of the visual field in this case, even after the partial central scotoma had disappeared and central vision had practically returned, is indicated by the peculiar brightness and distinctness around the point of central fixation and by the decreasing mental confusion in locating objects and lack of confidence in walking until normal projection was finally established.

The difficulty of a return of normal vision in an amblyopic eye, which is apparent, and in the two cases reported, only occurred after loss of, or loss of sight in, the fixing eye and which in the case here presented was not influenced by a tenotomy, would seem to indicate that amblyopia is, in a large proportion of squinting eyes, an acquired condition resulting from squint and but rarely a disease which is an etiological factor in the production of squint.

The etiology of acquired amblyopia can be logically demonstrated if it is admitted that hypermetropia produces a constant tension of accommodation necessitating an increased convergence of the visual lines, and that the deviation from the normal axis of vision thus produced causes confusion of images and subsequently diplopia.

The natural tendency of the visual centers is to relieve themselves of this diplopia which is an offending condition and relief is attained by a gradual loss of physiological sensibility through psychical exclusion of the vision of one of the eyes. The selected eye may or may not have diminished visual acuteness due to a greater refractive error than the fellow eye, each eye. however, generally having an hypermetropia of a greater or lesser degree which is almost always present and is undoubtedly an important etiological factor in the production of convergent squint.

The importance of hypermetropia as a factor in producing squint is illustrated in the correction of refractive errors by properly adjusted glasses after operations for tenotomy; the relief of the tension of accommodation assisting in maintaining the parallelism of the eyes by removing the cause of the previous convergence, the eyes frequently appearing to be on a perfectly parallel plane with the glasses in position, and decidedly converged when the glasses are temporarily discarded.

The conscious activity of the visual functions of each eye is maintained and the condition of visual suppression does not generally occur as long as the eyes converge only periodically, or even when the convergence is of the alternating variety; but when constant convergence of one or the other eye is present the mental process of suppression may occur rapidly to an extent sufficient to prevent confusion of images and may subsequently become so excessive that the amblopia will render the eye practically blind in consequence of the continued condition which favors a desire to mentally abstract the power of vision. The facts presented indicate the desirability not only of early operation in all cases of convergent squint before the amblyopic condition is fully established but also the adjustment of correcting lenses which relieve the tension of the accommodation and should be used in all cases of convergence whether an operation for tenotomy of the recti muscles is resorted to or not.

J. F., aged thirty, a strong, healthy man, applied for treatment at the Paterson Eye and Ear Infirmary. When a child he had a convergence of the right eye which persisted until he was about seventeen or eighteen years of age; at that time he was operated by Dr. Althoff at the New York Eye and Ear Infirmary; he was not fitted with glasses. He did not consider the operation perfectly successful, as his eye would turn in at times, especially when he became at all nervous or self-conscious.

He was not aware that there was any difference in the vision of his eyes until about one year ago when he called upon an optician for the purpose of selecting glasses for use in reading, in consequence of a scratching, burning and heaviness of the lids which troubled him at night.

He then discovered that he could not see to read as well with the right as he could with the left eye, and that a glass made no improvement in the vision of the right eye either for near or distance; his left eye he thinks was slightly improved both at distance and near by $+^1/_{32}$ which he bought at that time and has since used in reading at nights. August 28, 1893. While working at his trade as a machinist he was struck in the left eye by a flying piece of wrought iron chipping about one-half inch by three-fourths of an inch in size. He immediately applied for treatment. Examination disclosed a wound of the cornea about $3'''$ in length in the infra-nasal quadrant with the iris prolapsed.

There was an appearance indicating the presence of some particles of iron adherent to the wound which was probably due to pigmentation from the iris as it could not be removed by the magnet and subsequently disappeared.

The cornea was stroked until the iris receded, although a portion midway between the pupilary margin and the limbus still remained in contact with the corneal wound, the anterior chamber being empty.

The vision of the right eye was then tested and found to be $^{20}/_{\text{LXX}}$, no improvement with glasses.

The patient was then sent to the hospital, cold applications were used continuously, and one drop of a solution of sulphate of eserine, one-half grain to the ounce, was dropped into the eye three times a day. September 1. The injured eye has made extremely satisfactory progress, the corneal wound having closed, the anterior chamber being re-established, a slight anterior synechia only being present, the patient has suffered but little pain, ophthalmoscopic examination, however, disclosed a traumatic opacity of the lens, the pupil is slightly irregular and there is some circumcorneal injection. Left eye, V.=fingers at 1′.

On this date, only four days after the injury, the right eye, on examination, shows R. E., V.=$^{20}/_{\text{xx}}$; $^{20}/_{\text{xx}}$ w. $+^{1}/_{24}$.

Ophthalmoscopic examination is negative, no lesion being discovered and the fundus appearing perfectly normal.

September 4, one week after the injury, the vision is still further improved.

R. E., V.=$^{20}/_{\text{xx}}$; $^{20}/_{\text{xv}}$— w. $+^{1}/_{24}$.

September 9. His vision is still improving, on this date, for for the first time he is able to read large print at the near point.

R. E., V.=$^{20}/_{\text{xv}}$; $^{20}/_{\text{x}}$ — w. $+ ^{1}/_{24}$.

September 12, fifteen days after the injury, the eye used singly had normal vision, the patient was able to read.

Jæger No. 1 at ten inches.

R. E., V.=$^{20}/_{\text{xv}}$; $^{20}/_{\text{x}}$ — w. $+ ^{1}/_{24}$.

L. E., V.=Fingers at 4′.

September 21. He has experienced great difficulty in accurately locating objects and has a constant lack of confidence in walking which is decidedly improved since the glass over the left eye was blackened three days previous to present visit.

Although he can only see to count fingers at four feet with the left eye, he complains that unless it is covered it interferes with his vision for near or distance, producing a blurring of objects, probably due to a cerebral impression that the left eye is about to engage in the visual act. He states that he feels now as he used to with the other eye before the injury, as though he could do better with one eye closed. When reading with both eyes open and without glasses he has great difficulty in separating and locating objects and a feeling of confusion and blurring rapidly supervenes. In distant vision he describes a peculiar brightness and distinctness around the line of letters on all sides.

October 4. R. E., V.=$^{20}/_{\text{x}}$ w. + $^{1}/_{24}$.
L. E., V.=fingers at 6′.

The vision in the left eye is improved in consequence of the absorption of some of the softened cortex of the lens, the patient finds that he is still unable to dispense with the black glass over the left eye without great confusion, especially when out of doors, although he frequently does not wear the glasses in the house.

November 18. The patient tested with both eyes open and without glasses. V.=$^{20}/_{\text{xv}}$ —.

With the left eye closed and without glasses there was but slight difference in the vision although the patient was much more comfortable. V.=$^{20}/_{\text{xv}}$.

With both eyes open and glasses + $^{1}/_{24}$ over each. V.=$^{20}/_{\text{xv}}$ —.

With the left eye closed and a glass + $^{1}/_{24}$ over the right eye. V.=$^{20}/_{\text{x}}$ w. + $^{1}/_{24}$.

The vision in the left eye was fingers at 6′, he still wears the glass over the eye blackened when reading and for distances, when walking or cycle-riding. In all the tests of vision the Snellen test type was used, the patient, however, being placed only fifteen feet from the card, although twenty has been used throughout as a numerator of the fraction.

CONCERNING EXOPHORIA.

BY JOHN DUNN, M.D., RICHMOND, VA.

PART I.

"Our patient, Miss X., has suffered since a number of years from spasmodic accommodation and also from various forms of reflex neurosis going out from the great sympathetic and *originating evidently in the lower spinal column and probably the plexus uterinus.* Among those symptoms were photophobia, hippus, *syncope of the retina*, sometimes hyperæmia of the retina and choroid with considerable ciliary neuralgia. No real pathological lesion could be revealed by the ophthalmoscope. Her manifest hypermetropia was $^3/_4$ D., her reading glasses $^1/_2$ D., when I saw her last year. The case is one of constant variation; sometimes *accommodative astigmatism is quite distinct*, but its correction has never given any satisfaction. Treatment consisted chiefly in tonics and nervines with eye rest."

Miss X., aged 47, remembers to have become conscious that she had eyes when she was 16, and at that early age they used to cause severe headaches which often lasted thirty-six hours continuously. Since that time her eyes have been the seat of more or less trouble. As time passed Miss X. became hysterical and was subject for years to attacks of hysteria of great severity. I shall mention only two of its manifestations: muscular spasms so intense that she would beg her physician to unbend the contracted parts no matter what force might be required; and, finally, hysterical coma. Her eye troubles have grown constantly worse, and, accompanying them, headaches of the severest forms. During these headaches the two spots of greatest localized pain are the top of head, where the skull at times feels as if it would burst and where the pain is then so constant and severe that she has asked to have a gimlet hole bored through the skull to relieve the pressure, and it has even suggested to the patient that the wall of the skull was thickening at this point and compressing the brain; the second spot is the back of the neck where "a lump will form" and be the seat of intense aching.

When Miss X. was first seen, December 3, 1892, the condition of affairs was well described by her oculist, a part of whose letter begins this article. I have chosen this quotation as an introduction to these remarks, inasmuch as it serves to accentuate a point I wish to make in regard to the continuance of headaches in the presence of muscular anomalies. Reading had become impossible with or without glasses, for any attempt to read brought on "syncope of the retina," every thing would "become black as midnight before the eyes" and nothing of the surroundings was visible. These attacks lasted "a minute or two" and would then pass off; to be renewed whenever a fresh attempt was made to use the eyes. Blue glasses were worn to make the light endurable. So sensitive had the retina become to light that throwing a weak gas flame upon the fundus for the purposes of a brief ophthalmoscopic examination would cause a severe headache which would last for several hours.

During the next week the patient was seen several times; any examination of the eyes which lasted over a minute or two was impossible, owing to the severe pains it would cause in the head and eyes. I could find no pathological condition of the eyes to account for the series of nervous symptoms referable to the eyes. The fundus was normal; tension normal; media clear. No inflammatory symptoms of any kind, save, perhaps, an undue fullness and prominence of the subconjunctival veins. (Although, perhaps, a little out of place here, I may add that the cornea of each eye was undersize; vertical diameter being $9^1/_2$ mm., horizontal 10 mm.). No signs of glaucoma. In measuring the tendencies and strengths of the various external ocular muscles, I found abduction 7, adduction 10, then 12. It required, however, an effort to overcome 12 and *following, immediately upon the effort, was extreme nausea, which lasted for some time.* With a Maddox cylinder no hyperphoria could be shown (and, *en passant,* I will add, that the Maddox prism is of no value, in determining, with any desirable accuracy, small degrees of hyperphoria). I found, however, that Miss X. had 3° exophoria.

At this time, owing to the great pain that followed any voluntary effort of their muscles, Miss X.'s eyes were so little well under control that accurate measurements of the strengths of the muscles were impossible. A minute a day for examination is a very little while. I, however, managed to find out that distinct exophoria existed. The eyes showed a slight amount of hyperopia, about 1/2 D.

Now let us examine a moment the symptoms in this case and see the reasons for supposing the seat of the trouble to be the "*in the lower spinal column and, probably the plexus uterinus.*" The symptoms are *spasmodic accommodation, photophobia, hippus, syncope of the retina, hyperæmia of the retina, and choroid* (?) *with considerable ciliary neuralgia, accommodative astigmatism, severe headaches.*

When I first saw Miss X., there was not a symptom mentioned above that did not result, *and almost immediately,* whenever she attempted to read, that is, to bring into play the muscles of accommodation for close vision, that is, further, to exercise the internal recti as opposed to the external recti and to make a call upon the ciliary muscle. Now, if the seat of the trouble were in the lower spinal column and uterine plexus, and these eye symptoms were the expression of discharges of nerve energy from "*the diseased areas,*" then these symptoms should appear of themselves and not await the use of the eyes to produce and continue them. Let Miss X. attempt to read (and with glasses correcting the refractive error), and, after a minute or two, syncope of the retina follows. It is a wide stretch of the imagination to attribute this syncope to disturbance of the uterine plexus due to reading, or to writing, or to sewing. The attempt to overcome a 12° prism, base outwards, causes severe nausea, with such a fearful headache following it that the patient has to go to bed for hours. One feels at liberty to say that there is not a very close connection between a 12° prism and the uterine plexus. No. The trouble is an ocular one. Let me give an example from my note-book: Mr. G., aged 30, has $^1/_2$° left hyperphoria; $^1/_2$° esophoria for 20 feet; 4° exophoria for 12 inches. Continuous use of his eyes for reading or writing for several consecutive days and until late at night during this time will produce, and every time, migraine so severe that nothing but rest will relieve it; it is always preceded by hypersecretion of clear urine of very low specific gravity; during the time that the migraine lasts any attempt at close work, or any mental exertion, aggravates it; there is photophobia; and, further than this, the appearance of slight rings about a gas light, together with considerable ciliary irritation, as shown by the fact that the eyeballs are sensitive to the touch. Mr. G., after trying innumerable "remedies" has found nothing but sleep of any value. It is the use of the eyes that produces this unpleasant train of symptoms and, further than this, the symptoms extend into the regions the most varied claimed by Dr. Stevens for disturbances of the ocular muscular equilibrium.

There is another point of great interest in this connection, a point which, when more clearly understood, will serve to explain why in many cases rest of the eyes fails to relieve these muscular headaches; why headaches which originate from want of muscular equilibrium do not cease when the patient has desisted for a seemingly reasonable length of time from use of the eyes for close work. The argument would seem to be, if headaches result from the prolonged use for close work of eyes whose muscular balance is at fault, then abstaining from close work will cause the headaches to cease—but only within narrow limits is this the case. And yet the fact remains that headaches result from the use of such eyes, headaches which often persist for days and weeks and months, during which time *apparently* only the minimum amount of close work has been done. Let us consider for a moment this question.

Miss X. had from time to time days of comparative comfort, but it was only at the expense of denying herself all social intercourse. For example, once, soon after she became a patient of mine, for three consecutive days she had comparatively little trouble with her eyes.

On the fourth day Miss X. dictated some letters, received friends, and was read to. In the evening her head began to ache. After retiring she was unable to sleep and being an excellent musician "she compared carefully in her mind several pages of one of Beethoven's sonatas with the notes of a late German composition which to her ear had a striking resemblance to Beethoven's work." She continued this comparison until she satisfied herself that the later composition had been plagiarized from the earlier. As a result of this mental music reading her headache increased until by the following morning its severity was fearful and continued for about thirty-six hours. And yet *apparently* Miss X. had not once during the day or night used her eyes for close work. What had she done? She had dictated words, to be written, we admit, by another person; she had listened to a person reading aloud, reading words, not a few of which represented ideas, rather than concrete objects, which ideas were stored away in the memory center as written or printed words; she had composed mentally two musical productions, which act involved the reproduction before the mind's eye of, to a greater or less degree, the musical forms as they appeared on the music sheet. What did these mental acts represent? In part, the exercise of the centers for memory of written or printed words and forms. How were these memories obtained? Primarily, through the use of the eyes and their musculature. And in obtaining them the greater part of the muscular work was done by the accommodative apparatus. As a necessary result of this the eye muscle centers in the brain become intimately connected with the centers for written words and forms and, in an educated person, the association tracts between these centers are necessarily well developed and important.

Injury to the supra-orbital nerve has been known to cause reflexly syncope of the retina, diminution of the field of vision, spasm of the accommodation, headache, etc., all of which reflex disturbances grew worse and worse so long as the injured nerve was left untreated and which, after treatment of the nerve, required several weeks to disappear. And, so far as I know, the best word explanation (and I use this expression inasmuch as we know neither the nature nor the limitations of nerve force) of these reflex disturbances is that they are the result of *nerve center exhaustion due to continuous excessive energy originating in a constant, abnormal focus of nerve disturbance.*

Exophoric eyes, save in certain cases of compensatory exophoria, are not formed by nature for close work and every attempt to use such eyes for accurate close vision requires an effort; unfortunately it is not a conscious effort and hence the person with exophoria is unable to limit the amount of the effort within confines beyond which eyeache results. Let me give an example: grasp the rubber bulb used to force air through a Paquelin's cautery reservoir and compress it several times in rapid succession; for the first few times we are conscious only of the effort of contraction of muscles of arm, hand and fingers; but soon the fingers tire, the wrist feels as though it were constricted, the arm and wrist pain, after a little we desist, being unable to continue the exertion, and our arm aches for a while after we cease. Thus does *excessive conscious exertion* produces pain. And there is no earthly reason why *unconscious excessive exertion* should not do the same.

The use of exophoric eyes for near work will produce in time nerve exhaustion of the centers for the eye muscles; the effort, if continued, will in time produce exhaustion in the centers allied by association tracts with the eye centers, among which some of the most important in educated persons are the centers for the memory of written words.

Continued still further this nerve disturbance will affect other areas and there is no reason, following this analogy, why reflexly there should not occur as the direct result of eye trouble all the manifestations of nerve force of which the human brain is capable. Furthermore, I believe, that under certain circumstances, such is the case, and that when due consideration has been the subject that its importance will be given the recognition it deserves.

Thus, in Miss X.'s case, the severe headaches that occurred on the fourth day can be explained and most satisfactorily by remembering that the dictation of letters and the listening to the reading of a book require exertion of the centers for the memories for written words, which centers are intimately related to and in a measure owe their development to the existence of the centers for accommodation; and the exercise of the one necessarily causes exercise of the other; and lastly that the headaches were directly the result of exercise of the already exhausted centers of accommodation.

In this connection there is another point of some interest which may be brought out. Miss X. asked me, "why is it that as I grow older my headaches increase in severity, in number, and in duration, and why is it that my eyes become constantly of less use to me aud are the seat of so much trouble?" These questions are not easy to answer precisely. Miss X. is well educated and pushes her efforts to acquire knowledge to the limits of her physical ability, that is, until headache makes her desist; and when headache has caused her to "have all the blinds closed and everybody out of the room," her mind takes up the work her eyes refused to do and caries it on. Miss X. never leaves her room during the winter months, and takes during the warm weather the minimum amount of physical exercise. It has thus happened that for years, (and Miss X. has been or has considered herself to be an invalid for many years), the only muscles that have been exercised beyond a minimum have been the eye muscles, which muscles in turn have been all along so balanced that use of them for the very work they have been used for—*i. e.*, close work—was impossible save for a short time, because muscle strain quickly resulted. Consequently there has been overexertion of one set of muscles, there has been an undue development (*i. e.*, compared with the other parts of the brain) of the connections between the eye muscle centers and the word memory centers. There has existed during these years in the centers for the eye muscles the condition of nerve exhaustion, which condition is kept up by the facts that any use of the eyes causes undue exertion, there being exophoria, and that even when the eyes are closed there results from exercise of the word memory centers additional strain upon the already exhausted motor eye centers owing to the extremely intimate connections between these two sets of centers. At first when Miss X. was young, over-use of the eyes produced eyeache, then headache, these being merely the signals of eye strain and then of nerve exhaustion in the eye centers, rest for a few days was sufficient to allow further use of the eyes. As years passed by, the calls made directly (by use of the eyes) and indirectly (from use of the associated centers) upon the eye muscle centers have increased in frequency until these latter centers never have time to recover from their condition of exhaustion—until, at last, any call upon the eye muscles for work results in the above-mentioned symptoms as shown in the eyes themselves, syncope of retina, etc., and the subsequent headaches. While it goes without saying that in the case of Miss X. there are many conditions that demand attention, no hope of a permanent cure can be reasonably entertained, until the eye muscles have, as the prime cause, been put into a state of equilibrium.

While the above remarks have suggested themselves as an index to an explanation of the cause and continuance of the headaches in the case of Miss X., the idea is not intended to be conveyed that a good education is a *sine qua non* for headaches resulting from exophoria, for this condition may produce almost continuous headaches in people whose book education is deficient, and also in those whose mode of living requires constant contact with the outer world and who live active lives. One of the worst cases I ever met with was that of Mrs. H., the wife of a farmer. Health bad. Her education was limited and her life active from necessity, and yet for years headaches had made her life well-nigh unendurable. Nor are headaches from exophoria confined to women. This condition is sometimes the cause of severe periodic headaches in men, who enjoy, apparently, the best of physical health. Many of the cases of exophoria that have come under my observation have very small refractive errors; some showing a refractive error of $^1/_2$ to $1^1/_2$ D. cyl. ax. 90°, and in these cases correction of the muscular error often renders the use of a glass unnecessary. In looking over the docket one is struck with the fact that the charges against exophoria vary much in the different cases; nor is it always easy to see why.

In the case which suggested this article we touch upon the boundaries of that unknown region, hysteria; we have a patient whose bodily powers are impaired seriously, whose "general health is bad," but we have severe headaches which result whenever the eyes are used, and exophoria exists. As far as my experience goes, in the majority of cases of headaches, which resulted, so far as any assignable cause could be discovered, from exophoria, the possessors of this trouble have been well nourished and, most people, judging from appearances, would envy them their health. Not only does their general health appear to be excellent, but it is excellent, and they pay the penalty, headache, only when they have forced conclusions with their eye muscles. Unquestionably the general health has not a little to do with the freedom from or absence of headaches in the presence of heterophoria, but, at the same time, it is the heterophoria that is the starting point of the headache and not the condition of the health.

It may not be out of place here to say a word or two in regard to headache accompanied by eyeache as "a reflex neurosis originating in the plexus uterinus." To my mind, observation but strengthens the reasons for believing that for uterine trouble to be accompanied by headaches with eyeache, there must exist some refractive error, or some imperfection in the ocular muscular equilibrium, or a combination of both.

I have in mind the cases of two young, unmarried women, both of whom have suffered for years from derangement of the menstrual function. One of them suffers constantly from headache and eyeache, the other does not know what this combination of miseries means. The former's eyes have both refractive and muscular errors; the latter's eyes are practically normal. Headache with eyeache has in my practice, so far as I know, found its expression only in those persons where there existed ocular irregularities.

Naturally, any trouble, whether confined to one region, as the uterine, or whether general in character, tends to weaken the whole constitution, and will find expression, reflexly if you will, in those regions already abnormal or irregular in their functions; but the point I wish to make is, that when we find headache with eyeache, (apart from those rare cases where this is a symptom of tumor, etc.), no matter where be the leading cause, the uterus, the ovaries, the liver, the general system, there exist also ocular irregularities, and that just in proportion as we shall be able to correct these irregularities in the same proportion will the headache with eyeache cease to be "the chief symptom" of the trouble. The treatment of exophoria in its various combinations will be considered in the conclusion of this article.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Henry Power, M.B., F.R.C.S., Vice-President, in the Chair.

Thursday, Noveeber 9, 1893.

Neoplasm of the Iris.

Mr. Lawford read the report of the Committee on Mr. Beaumont's case of Neoplasm of the Iris.

Benzoyl-Pseudo-Tropeine as a Local Anæsthetic in Ophthalmic Surgery.

This paper was read by Mr. T. J. Bokenham. He said benzoyl-pseudo-tropeine, or tropa-cocaine, was a new coca-base extracted from the small-leaved coca plant of Java, and was identical with the pseudo-tropeine obtained from hyoscyamus. The alkaloid as obtained from the plant had considerable irritating properties when introduced into the eye, but this was not the case when it was obtained by synthesis. The specimen of the synthetically prepared alkaloid, in the form of hydrochlorate, was made into a three per cent. solution, and tested by the author. It was found most efficient for inducing anæsthesia of the cornea, and had the advantage of causing no dilatation of the pupil, and none of the ischæmia characteristic of the action of cocaine. There was no disturbance of accommodation following its use. As an anæsthetic to the lid before applying mitigated stick or lapis divinus, a ten per cent. solution had been found as successful as a corresponding strength of cocaine. This had been found sufficient in such operations as strabismus, division of stricture of lachrymal duct, and opening of Meibomian cysts. Tropa-cocaine had the following advantages as compared with cocaine: It caused no dilatation of the pupil, and no disturbance of accommodation; it was much less poisonous than cocaine, and it did not, if swallowed, produce delirium. The vascular condition of the eye was not affected by it, and in the form of a solution it kept better than cocaine.

SPONTANEOUS RUPTURE OF CAPSULE AFTER IRIDECTOMY PRELIMINARY TO CATARACT EXTRACTION.

This paper was read by the Secretary for Mr. J. T. Rudall (Melbourne). Five months after an uncomplicated preliminary iridectomy it was found that the cortex of the lens had undergone partial absorption, allowing a clear space between the nucleus, which appeared to be somewhat tilted backwards, and the upper edge of the cornea. It was probable that a limited spontaneous rupture of the capsule had taken place. Fearing that the nucleus of the lens might fall back into the vitreous, the author removed it. No vitreous was lost, and the recovery was uncomplicated.

EXTREME HYPHÆMA OF BOTH EYES WITH CORNEAL ABSCESS OF RIGHT EYE OCCURRING AS A SEQUELA OF SMALL-POX.

This paper was read by the Secretary for Dr. Kenneth Scott (Cairo). Ten months before admission into the Kasrel-Aïni Hospital the patient, a boy, aged nine, had been attacked by small-pox, which was immediately followed by loss of vision in both eyes. At the time of admission there was a circumscribed abscess of the center of the right cornea, the anterior epithelium being intact. There was no pain nor lachrymation, and only moderate injection. The anterior chambers of both eyes were filled with a dark red brown mass, completely concealing the iris. There was no trace of irritation of the left eye. The tension of both eyes was normal. Vision equalled perception of light. After seven weeks' treatment the corneal abscess disappeared, and the upper third of the red brown mass in both anterior chambers had become of a light buff color, and quite transparent. The patient was kept under observation three months longer, but the eyes remained in exactly the same condition.

LIVING AND CARD SPECIMENS.

Messrs. Critchett and Juler—Case of Pemphigus of the Conjunctiva.

Mr. G. Anderson-Critchett—Case of Conical Cornea Treated by the Galvano-Cautery Without Perforation.

Mr. Juler—Case of Central Colloid Changes in the Retina.

Mr. Frederick Bass—A Pocket Refraction Case.

Dr. Rayner Batten—Persistent Hyaloid Artery Branching in Vitreous.

Mr. Donald Gunn—Case of Syphilitic Conjunctivitis.

SELECTIONS.

LEGISLATION IN THE UNITED STATES FOR THE PREVENTION OF BLINDNESS.[1]

BY LUCIEN HOWE, M.D., BUFFALO, N. Y.

At the meeting of the American Ophthalmological Society in 1887, I presented a short article in regard to the increase of blindness in the United States, calling attention to the fact that according to the census reports, the number of blind in this country was increasing much more rapidly than the population. The Society was kind enough to appoint a committee to examine into the subject, as did also the Medical Society of the State of New York, after the same figures had been presented there for consideration. The committees in both of these Societies reported the advisability of some legislation to limit the further increase of what may be considered one of the principal causes of blindness, namely, ophthalmia neonatorum. Since that time, the States of New York, Maine and Rhode Island have all passed laws which have for their object the preventative treatment of this disease, and I wish here to show the desirability of similar laws in other States.

The facts in regard to the subject were published in the Transactions of the New York State Medical Society and of the American Ophthalmological Society so completely that there seemed but little to add to the subject. Since then, however, the statistics gathered by the census of 1890 have been obtained, and these furnish sufficient additional data to warrant my calling attention to the subject again, and recapitulating briefly the reasons why legislation in various States should be enacted for the prevention of blindness.

---

[1] Read in the Section on Ophthalmology, at the forty-fourth annual meeting of the American Medical Association.

In 1880, for the first time, a systematic attempt was made to ascertain the entire number of the defective classes—these among the rest—and when the statistics for that year were compared with previous years the apparent increase was astonishing.

When, however, the number of blind in 1890 is compared with the number in 1880, we find that there is an increase of only 3.20 per cent., there having been in 1880, 48,929 blind, and in 1890, 50,411. There are good reasons, however, for considering that this last census gave a much less complete record of such persons than did the census of 1880. I am indebted to Hon. Robert D. Porter for a type-written copy of the returns concerning the blind taken June 1, 1890. The summary shows that there is a total of 50,411. Male, 27,983; female, 22,458; white, 43,351; colored, 7,090; natives, 41,265; foreign, 9,146.

In some States this increase has been very slight; in others quite marked. But whether the number it large or small, the important fact remains that a really large percentage of the blindness is caused simply by neglect in early childhood. I mean, as a result of ophthalmia neonatorum. It is difficult to estimate exactly what percentage these cases bear to the total number of the blind, but various authorities estimate this from nine and one-half to ten per cent. or even more. In other words, on examining the figures carefully, we can say that without fear of exaggeration there are wellnigh five thousand blind in the United States, who are in that condition merely because of neglect on the part of those who had charge of them in early infancy. If the estimates were based upon the number of blind in asylums the percentage would be almost twice as large, as has been proved by an examination of a large number of inmates of the blind asylums not only in this country but also in Europe. The details of this are referred to in the papers already mentioned, and the facts can be easily substantiated by reference to the works of Fuchs, Magnus and others. On an average it may be stated, with a considerable degree of accuracy, that at least eighteen and one-half or nineteen per cent. of all the blind in early life are in this condition from ophthalmia neonatorum.

This fact would bear statement in detail were it necessary, or were it in accordance with the limit proposed for this short communication. Another fact which I would mention is one which also can be briefly stated before a society of those accustomed to treat ophthalmia neonatorum. This is, that ophthalmia neonatorum can now be considered a preventable disease. I need not elaborate this by calling your attention to the figures presented by Credé and others, or by referring to my own experience, or that which occurs in the practice of every one who has to deal with this disease. We all know how favorable a prognosis can be given in the early stage, and on the other hand we know how extensive are the ravages which may follow after ulceration of the cornea has once begun. All agree, I think, that when these cases are seen within the first week after birth a generally favorable prognosis may be given.

This brings me to the next point which I wish to make: that is, the desirability of legislation which should force nurses and attendants to bring these children to the notice of practitioners while the disease is still in the very earliest stage. The story is a familiar one of the infant being brought to the office of the oculist, with the cornea ulcerating or perhaps perforated, and the mother and sometimes the attending physician thinking that the child has "taken cold" and requires perhaps no further treatment than the hot water or milk which has been applied to the eyes. And the scene, also, is unfortunately familiar, of the mother weeping over a hopelessly blind child, all simply because the nurse has supposed that the infant has merely taken cold and had been relying upon some of the numerous household remedies just a little too long. The question before us, therefore, is what means can be adopted to bring these children as soon as possible to the notice of a competent physician. Education of the laity is useless. Urging the nurses, professional or others, is equally insufficient. It remains only to place the responsibility at once where it belongs, by imposing upen such persons a severe penalty. The surest and best means of accomplishing this is undoubtedly by legislation.

This was the view taken of the subject by those who have considered it most carefully; and following the plan which had been partially adopted before in Switzerland, and elaborating it, a concise but explicit bill for the proper protection of these infants was passed by both houses of the New York Legislature, 1890, without a dissenting vote, and became a law. The law was known as Chapter 41 of the laws of 1890, and was as follows:

AN ACT FOR THE PREVENTION OF BLINDNESS.

SECTION 1.—Should any midwife or nurse having charge of an infant in this State, notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse so having charge of such infant, to report the fact in writing, within six hours, to the health officer or some legally qualified practitioner of medicine, of the city, town or district, in which the parents of the infant reside.

SECTION 2.—Any failure to comply with the provisions of this Act, shall be punishable by a fine not to exceed one hundred dollars or imprisonment not to exceed six months, or both.

SECTION 3.—This Act shall take effect on the first of September, eighteen hundred and ninety.

My own impression is that this law was sufficient to cover all cases, and a sufficient number of convictions could have been obtained under it, not only to call public attention to the existence of the law, but also to prove a wise and very excellent lesson to the class whom it was practically to affect. A few convictions would have more effect in educating the laity and those who pretend to be nurses than would any number of lectures, leaflets or appeals of any kind. One or two partial attempts were made under that law to bring nurses to trial in New York City, especially by Dr. Derby, of the New York Eye and Ear Infirmary. He thought, however, that a loophole was left by the word, "notice," because nurses would be apt to say when placed on the stand that they had not noticed any such redness of the eyes or discharge from them. This is such a small excuse that it ought not to prevent the working of the law as there presented. Another objection to this was that it was not quite strong enough, and not being a felony, it might be difficult to place the responsibility on the proper person for beginning a suit.

The matter therefore, was taken in hand by Hon. Elbridge Gerry, who for many years has identified himself with legislation for children. The substance of this law has been incorporated in another. known as Chapter 325 of the laws of New York for 1892. The clause in regard to this reads as follows:

* * * Being a midwife, nurse or other person having the care of an infant within the age of two weeks who neglects or omits to report immediately to the health officer or to a legally qualified practitioner of medicine of the city, town or place where such child is being cared for, the fact that one or both eyes of such infant are inflamed or reddened, whenever such shall be the case, or who applies any remedy therefor without the advice, or except by the direction of such officer or physician, etc.

It is further provided that this is to be punishable as a felony.

We can, therefore, consider that in New York we have a law sufficiently stringent to teach nurses and midwives what their duties are, and parents what risks their children run when there exists what is ordinarily called a simple "cold in the eyes.'[7] It is important that the first cases should be so clear as to make conviction a practical certainty and in my own vicinity, at least, some cases of probable guilt have been allowed to pass unpunished. But it can only be a question of a short time before a good typical violation of this statute comes under some one's notice, and after having been once tested subsequent convictions will be easy.

The State of Maine was the second to pass such a law. There the matter was taken in hand by Dr. Holt, of Portland, with his associates. The bill was known as number 97 of the Senate, and has become part of the laws of 1891. The text is as follows:

SECTION 1.—Should one or both eyes of an infant become reddened or inflamed at any time after birth, it shall be the duty of the midwife, nurse, or person having charge of said infant, to report the condition of the eyes at once to some legally qualified practitioner of medicine of the city, town or district in which the parents of the infant reside.

SECTION 2.—Any failure to comply with the provisions of this act shall be punishable by a fine not to exceed one hundred dollars, or imprisonment not to exceeed six months, or both.

SECTION 3.—This Act shall take effect on the first day of June, eighteen hundred and ninety-one.

The third State to have such a law was Rhode Island. In that State the subject was brought to the attention of the Legislature, principally through the exertions of Dr. F. T. Rogers. That was passed at the January session of 1893, and the text is as follows:

SECTION 1.—Should any midwife, or nurse, or person acting as nurse, having charge of an infant in this State, notice that one or both eyes of such infant are inflamed or reddened, at any time within two weeks after its birth, it shall be the duty of such midwife or nurse, or person acting as nurse, so having charge of such infant, to report the fact in writing, within six hours, to the health officer or some legally qualified practitioner of medicine of the city or town in which the parents of the infant reside.

SECTION 2.—Every health officer shall furnish a copy of tbis Act to such person who is known to him to act as midwife or nurse in the city or town for which such health officer is appointed, and the Secretary of State shall cause a sufficient number of copies of this Act to be printed, and supply the same to such health officers on application.

SECTION 3.—Every person who shall fail to comply with the provisions of this act shall be fined not exceeding one hundred dollars, or imprisonment not exceeding six months, or both.

SECTION 4.—This Act shall take effect July 1, 1893.

It will be observed that the three laws now in existence are very similar, and as that of the State of Maine omits the word "notice," and is still complete in itself, it is perhaps the best thus far enacted, except that the penalty is too light.

A question might arise as to what advantage it is to oblige nurses and midwives to report to physicians a disease of which a certain class of so-called doctors are almost as ignorant as the nurses themselves. The answer to this is three-fold :

1. The nurse is made to apprectate her responsibility, not only in that case but in others, and to know that the condition indicated by the redness and discharge is not anything to be trifled with.

2. The parents also become alarmed when they know that the disease is sufficiently serious to be the subject of special legislation, so that in choosing a practitioner they select with rafher more than ordinary care.

Finally, as far as the physician himself. If he accepts the case he feels that he must understand it thoroughly and he will be apt to look it up with considerable care in his textbooks and treat it intelligently. Above all, if he fails to do that, the parents have a responsible individual against whom they can with perfect justice enter a suit for malpractice, and if he has proved himself incompetent he not only suffers the penalty which a law has provided for him, but one such case would be an example to him and to other practitioners in the community in which it occurred.

It seems needless to urge further the advisability of similar laws in other States, especially in those where there is a large proportion of foreign emigrants in the population. We know that their children are not only often cared for by midwives, but also often given over to them entirely at an early age, and women when accustomed to assume any such responsibility must be taught this part of their duties. If they will not learn in any other way, a heavy fine or imprisonment is but a small penalty for the crime of having blotted out the sight of a human being. Where the German population is large the children are often cared for entirely by midwives and these, though usually qualified by instructions obtained in their native countries, are also not frequently ignorant and careless in the extreme, and need to be taught that the hand of the law may interfere for the protection of the children given into their charge.

Having shown that such legislation should be enacted, and that it is our duty to lend our efforts and personal influence to obtain it, I wish to say, finally, that it can be done usually with little effort. Of course in any such undertaking it is necessary to enlist the sympathy and co-operation of a few leading men in each branch of the Legislature—those whose standing and character is such as to command respect for any measure which they advocate. The personal co-operation of the Governor is also a warrant of success from the first. But the average legislator is ready to listen patiently to any such claims of an unfortunate class, and his assistance for the bill is not difficult to obtain, being certain, as he is, that the originators of it have only the best motives. If the politician hesitate or are inclined to smile at measures for the relief of sore-eyed babies they are quickly brought to their senses, if confronted by such evidence as is unfortunately always at hand in every large city, or can be easily obtained among the inmates of every asylum for the blind. Such men realize that they have with them the hearty approval of their constituents, of the press, and of the people, and that they are saving from a life of misery, to which death is often preferable, a large class of those who would otherwise be hopelessly blind.—*Journal of the American Medical Association.*

CONCERNING MILD CONJUNCTIVAL INFLAMMATIONS AND THEIR LOCAL TREATMENT.

BY G. E. DE SCHWEINITZ, PHILADELPHIA.

It has been estimated that about sixty-three per cent of patients applying for treatment of their eyes in hospital service, and probably half that number in private practice, suffer from one or more of the diverse types of conjunctival disease. Not the least important, so far as the comfort of the patient is concerned, are the minor inflammations,—irritations, hyperæmias, and mild conjunctivitis. Often rapidly dissipated by means of simple soothing lotions, they occasionally cling with aggravating persistency to their area of occupancy. Even when the cause is removed—local irritants, lachrymal obstructions, diseases of the nasopharynx, various states of depraved health, vaso-motor disturbance, and eye-strain, either from defective muscular balance or from uncorrected ametropia—the conjunctiva may be long in assuming a normal aspect.

For more than a dozen years solutions of boric acid have been much employed by ophthalmic surgeons under these circumstances, as well as for inflammations of a higher grade which affect this membrane. A saturated solution (about four per cent) would be a suitable strength were it not that there is a tendency, with the changes of temperature, for the drug to be deposited at the bottom of the vessel which contains the lotion; hence it is ordinarily employed in three-per-cent solution, in which strength it is detergent, slightly astringent, and moderately antiphlogistic, at least these are the virtues to which its favorable action is usually ascribed. True, feeble antiseptic properties are also attributed to it, but if at all efficient in this respect, the concentration should be about 1 to 13, and not 1 to 33, as it is generally used; and as this concentration is not possible except under special conditions, it does not avail in practical therapeutics.

The detergent properties are probably the most important. Alkalinity of the lotion and corresponding improved cleansing power may be effected, as suggested by Jackson (Philadelphia *Polyclinic*, August, 1893), by the addition of sodium biborate in the proportion of four grains to the ounce, although his statement that a solution of boric acid itself is faintly alkaline is not in accord with generally accepted ideas, nor with tests which have been made to ascertain the accuracy of this assertion. Probably owing to the slight astringency of boric acid, many patients complain of an unpleasant dry sensation after its solution has been applied to the conjunctiva. It may be almost wholly avoided without destroying this or any other qualities of the drug, by adding two or four grains of sodium chloride to the mixture. Indeed, the addition of the salt enhances the therapeutic value of the lotion.

The usual method of applying these solutions is with a pipette or by means of an "eye cup," but distinct advantage is gained by atomizing the fluid with an ordinary hand instrument or, still better, with the aid of an air-compressor, the pressure being just sufficient to create a uniform gentle spray, which is allowed to play upon the inflamed or irritated surfaces. The liquid thus applied readily cleanses the affected areas, and probably medicates not merely their surface, but slightly penetrates the tissues and correspondingly increases the extent of the contact and prolongs the action of the drug. It is not improbable that equally good effects may be secured with a physiological salt solution, or even with boiled distilled water; but the distinct value of the drugs just described is so universally conceded, and, indeed, demonstrated, that no good reason can be assigned for dismissing them from practice.

When the conjunctival affection assumes a hyperæmic type, abnormal secretion being practically absent and the congestion largely confined to the bulbar conjunctiva, excellent results are obtained by using a method advocated by Kõnigstein ("Die

Behandlung der häufigsten und wichtigsten Augenkrankheiten," Wien, 1889) in the treatment of vaso-motor blepharitis,—namely, douching the closed lids with water at a temperature of 60° F. from a vessel raised a short distance above the head of the patient, the fluid being conducted through a small apparatus in the form of the rose ordinarily seen upon watering-cans, and thus distributed in fine shower-like jets. The temperature of the water may be varied according as a hot or cold lotion is indicated, and the application is more agreeable, if not more efficient, by the addition of a little eau de Cologne.

Washing of the eyes with tepid water and Castile soap is productive of good results,—a method likewise suited to forms of moderate conjunctivitis characterized by a secretion just sufficient to glue the lids in the morning. It is astonishing how this simple procedure, much employed by Knapp in preparing eyes on which the operation for extraction of cataract is to be performed, will subdue redness and irritability of the conjunctiva and margins of the lids. The stronger astringents and antiseptics,—alum, sulphate of zinc, bichloride of mercury, and particularly nitrate of silver,—while fulfilling evident indications in more aggravated lesions of the conjunctiva, are not applicable to these moderate affections, which yield more readily to the mild measures which have been described.—*Therap. Gaz.*

NEWS.

THE INTERNATIONAL MEDICAL CONGRESS.

Dr. A. Jacobi, Chairman of the American National Committee of the Eleventh International Medical Congress, has received the following communications from the Secretary General:

1. Papers to be read in any of the Sections of the Congress should be announced on or before January 31, 1894, to the Secretary General, Professor E. Maragliano, Ospedale Pammatone, Genoa, Italy.
2. The title of the paper ought to be accompanied with a brief abstract of its contents and conclusions.
3. The programme to be distributed will contain the titles of all the papers announced before August 31, 1893, and since.
4. The reductions granted by the railway companies months ago will be available from March 1 to April 30, 1894.

In the intesest of such medical men as sail for Europe before official cards have been received from the general committee, Dr. Jacobi proposes to supply, in as official a form as he thinks he is justified in doing, credentials which are expected to be of some practical value. It is suggested, besides, that a passport may increase the traveler's facilities.

A letter of the Secretary General's, dated November 29, informs Dr. Jacobi that "traveling documents" will be sent to the address of every subscriber on or before February 15, 1894, and after that date "congressists" will have to apply to Dr. Jacobi.

It also contains the following regulations of former circulars: Members' dues are five dollars (money order to Prof. L. Pagliani, Rome); guests' (wives and adult relations'), two dollars; medical students,' no fees. All are entitled to traveling documents. Reductions on the Italian railways are available from March 1 until April 30.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. FEBRUARY, 1894. No. 2.

ORIGINAL ARTICLES.

ON SUBCONJUNCTIVAL INJECTIONS AS A THERAPEUTIC MEASURE.

BY ADOLF ALT, M.D.

Since the new method of treating diverse diseases of the eye by means of subconjunctival injections has been introduced by Darier, numerous papers on this subject have appeared in European journals. Some of these evidently shot beyond the mark in their enthusiasm, while another number of authors, for some reason. could find no good in this method of local medication. If the literature of the country is a true criterion, Darier's method seems to have been but seldom put to a trial by American investigators. Having made use of this method of treating diseases of the eyeball, and particularly such as may be considered due to a microbic invation of its tissues, for about a year, it may, therefore, not be amiss to record some of my experiences with it.

The solution which I have employed thus far has invariably been the one originally advocated, namely, bichloride of mercury 1:1000. Of this two minims were injected under the conjunctiva near the corneo-scleral margin of the upper half of the eyeball. I tried, of course, always to do this as asepstically as possible. The needle is of platinum-iridium and can be purified by the flame. No disagreeable accidents have ever happened to me. To be sure, when a large nerve twig has been wounded, the pain is quite bad and lasting, and sometimes a small hæmorrhage occurs, but neither of these accidents resulted in more than a passing inconvenience.

The quantity of mercury being injected by means of this treatment appeared to me at first so small, that I doubted that this could play an important rôle in the effect. I am still of the opinion the counter-irritation due to the little operation has something to do with its effect, although, as repeated experiments have convinced me, the injection of water alone, or of a solution of boracic acid, seemes to be followed by no decided effect on the course of the disease.

The first case in which I use the subconjunctial injection of mercury was so striking in its result, that I have employed these injections since then in a considerable number of cases.

The patient J. M. J., 28 years old had been suffering from recurrent iritis for 5 years. Every year he had three or four attacks for which he had always been treated in the usual way by atropia, salicylate of soda and mercury, although he denied syphilis. The attacks had always lasted from three to six weeks and although different specialists, of renown had treated him, nobody had, in his opinion, given him any lasting benefit. Having got him to confess to several attacks of gonorrhœa when he first came to see me on Jan. 13, 1893, because the right eye had been again attacked by iritis four days previously, I made him at once a subconjunctival injection. The eye at that visit was very greatly injected, the pupil small and bound down by several posterior synechiæ. Several instillations of atropia had no effect on it, and the patient was accordingly in a very gloomy mood foreseeing a siege of iritis as grave as any of its predecessors. However, when he called on me the next day, he reported great improvement. He had slept all night and had now no pain whatever. The synechiæ had given way and the pupil was *ad maximum* dilated. The injection of the eye was considerably reduced. The patient felt so well, that he returned to business and did not reappear at my office, until six days later, he came "simply to let me see his eye." It was then in appearance perfectly normal and pale. Never had he experienced such magic relief before. He promised to return to let me know of any further changes.

About five weeks later he returned, because the other eye (the left eye) had begun to get inflamed during the night. Another attack of iritis being plainly visible, I made at once an injection. A week or so-later he came just to tell me, that the injection had at once removed all symptoms and that he was free from all annoyance. He most forcibly attested the superiority of this new mode of treating his iritis and promised to return at the slightest sign of a further recurrence. He has, so far, not returned.

I have since seen similar results several times, although not every case was equally brilliant. The cases of iritis, whether idiopathic, specific, rheumatic or traumatic in which I have employed the subconjunctival injections, have invariably yielded to this treatment much more promptly and satisfactorily, than those in which no subconjunctival injections were employed.

In several cases of serous irido-choroiditis this new method of treatment has been the means of reducing the time and altering the course of the affection very considerably.

I am just now getting through with the case of a lady in the climacteric period who came to me on December 28, 1893, with severe iridochoroiditis serosa in the left eye. She counted fingers at $^{1}/_{2}{}'$, with the ophthalmoscope barely a slight reflex could be obtained. I injected sublimate every week with the result, that when I made the fourth injection on January 23, she had $V = {}^{20}/_{xxx}+$. The pupil was large and round, a few dots on the Descemetic membrane were still visible, the vitreous body was perfectly clear and the fundus could be scanned in all its details. It revealed a large peripheral atrophic spot in the choroid. Surely the short time it took, to accomplish this was due to the manner of treatment, if my experience with such cases goes for anything.

I have had similarly good results in a number of cases of exudative choroiditis, also in cases of central chorio-retinitis, in a number of which central vision came up to a surprisingly good quality in comparison to the visible lesion.

Having under my care at the same time two cases of detachment of the retina in small ridges in the neighborhood of the macula lutea, in both of whom several months of treatment with pilocarpine, rest, etc. had been found useless, I determined finally to try the sublimate injections. I hoped the more to see some good result from them, since I considered these ridge-like folds of the retina due to a more solid exudation upon the inner surface of the choroid. Although these cases were almost parallel in appearance, the one (a young man) received no more benefit from this, than from any other treatment, which may have been due to the fact, that he kept on with his work as a book-clerk; the other, a young girl, on the contrary, began to improve at once and although there are at this time still some raised fold visible in the lower periphery, the largest part of the lesion has disappeared and the macula lutea is free. Vision is almost $^{20}/_{\text{xx}}$, and the large scotoma, which had brought her to me, has disappeared.

In the treatment of corneal troubles, particularly in parenchymatous keratitis, the sublimate injection have yielded no beneficial action in my hands.

From the experiences I have gathered with the employment of this new method of treating diverse diseases of the eyeball, I can only join with those, who recommend its use warmly and I think, the reluctance which many may feel in adopting it and which I felt, too, is as far as my experience goes uncalled for. Many times have I hesitated in acute cases, from fear of causing additional irritation and pain, to make a subconjunctival injection, until other treatment had proven useless, when I found that the injection, far from increasing the disagreeable symptoms, speedily relieved them.

I could then not help thinking, that an earlier injection might have brought relief much more quickly.

When undertaken with the necessary asepsis, these subconjunctival injections of mercury seem to bring no danger with them and are decidedly beneficial in a great many cases.

CORRESPONDENCE.

AMBLYOPIA FROM SUPPRESSION OF THE VISUAL IMAGE.

IOWA CITY, IOWA, February 3, 1894.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—In the excellent article of Dr. Johnson, in the January number of your journal, on "Amblyopia from Suppression of the Visual Image," it seems to me that the explanation of "amblyopia ex anopsia" is unnecessarily complex. Amblyopia from non-use is found whenever a perfect retinal image fails to be formed, at the point of fixation, in infancy or in early childhood; it more rarely occurs under the same circumstances later in life. This proposition is true whether the failure to form a perfect image is due to hyperopia, myopia, astigmatism, cataract, corneal opacity, or neglect of one eye by selection of the other. Such loss of functional power or rather absence of functional power of an unused organ is universal; but a function never employed, is more completely in abeyance than one once developed and afterwards disused. To secure the perfection of synchronous movements by the two hands of an accomplished pianist, requires the training of each. It seems to me that we need go no further to explain, whether or not there occur ultimately changes in the nerve centers which render it permanent. The enforced use of the squinting eye, in the early years of the affection, *does* develop its use and prevent amblyopia, provided a fair retinal image at the point of fixation be possible. This has been established by a long line of testimony, reaching from de Wenzel, 1808, through Mackenzie to our own time; even Schweigger who considers the amblyopia as the cause rather than the result, of squint admits this. If by "suppression of the retinal image" be meant the operation of directing the mental effort to one eye, neglecting the other, this is possible in all conditions, and is seen in its most perfect development in alternating squint, where no amblyopia exists. I believe, that the best vision in strabismus is obtained, not by early operation, but by enforced use of the squinting eye, followed by the earliest possible correction of vision of both eyes; beginning this treatment at five years of age, and even later, I have repeatedly secured binocular fixation and vision, without operation. C. M. HOBBY, M.D.

EIGHTH INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

EDINBURGH, January, 1894.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—The Eighth International Ophthalmological Congress will be held in Edinburgh this year. It has now been decided to have the meeting on August 7, 8, 9 and 10.

The Organizing Committee is anxious to receive as soon as possible the names of all their American confreres who desire to be enrolled as members of the Congress.

They look forward with special interest to having American Ophthalmology largely represented.

You will greatly facilitate arrangements if you will kindly indicate to either of the undersigned whether or not you expect to be able to take part in the proceedings.

GEORGE A. BERRY, D. ARGYLL ROBERTSON,
31 Drumsheugh Gardens. 18 Charlotte Square.

SELECTIONS.

A PETREFIED EYE.[1]

BY JAMES A. LYDSTON, M.D., PH.D.

Through the courtesy of Mr. George B. Davis, of Chicago, I am able to present to the Academy this evening a fossil that I believe presents a typical example of a petrefied eye. The fossil was found at the mouth of Knife River, on the north shore of Lake Superior, in 1886, and was first cut by a Chicago lapidary, named Lyman. In order to demonstrate microscopically the arrangement of its parts, I had a second section made, which shows more clearly the structure of the petrefied formation. The eye was first present to me by Mr. Davis and a reporter for the *Inter-Ocean*, who handed it to me for an opinion. On superficial examination I strongly believed that it was a petrefied eye, and so stated at the time, and now, after more exhaustively investigating the subject, I more fully emphasize this opinion. I have submitted it to the critical eyes of some of the most competent and expert lapidaries, and without exception the conclusion of these connoisseurs has been that nothing like it has ever fallen under their observation, and it seems that a single glance will convince even the most skeptical that aside from the changes consequent upon petrifaction, it most closely approximates the structure of the human eye, and presents many analogous features.

First, we have its outer layer, which conforms to the sclerotic or outer fibrous envelop of the eye, and apparently in keeping therewith we notice that it is denser in its vitreous characteristics, and from the fact that its opaqueness renders its illumination impossible, it appears dark under the microscope just as a piece of chalk looks black when held in front of a flame. Lining this we find a somewhat darker pigmented layer composed of circular light and dark striæ, which answers to the choroidal or pigmentary layer of the eye, and we can microscopically outline its several layers, and can even do so macroscopically under intense illumination with reflected light. We cannot define the retina as in its normal state, except its bloodvessels; it is perfectly transparent, and indistinguishable, and its structure so delicate that it has possibly been obliterated during the petrefactive changes. Furthermore, It is normally so closely approximated to the choroid that fusion would naturally ensue during the process of contraction and shrinkage consequent upon solidification. The vitreous humor or hyaloid body is found in a more or less crystalized form, with here and there darker pigmentary deposits, and prior to the final stages of petrefaction it is probable that the aqueous humor diffused itself throughout the vitreous, thus causing, in combination with the inorganic elements from filtration, a more or less definite crystalloid structure. In regard to the lens, it appears to have been pushed forward into the anterior chamber, and pressed against the iris, and seems to occlude the pupillary opening; in other words, we have here a pretty illustration of occlusio pupillæ. The iris is shown in a somewhat typical manner, and displays itself in a mottled or tesselated form, which is quite noticeable in some irides. Its outlines are distinctly perceptible to the naked eye, and are still more conspicuous when inspected by means of transmitted light and a magnifying lens. We then see at the outer quadrant posteriorly a vacuole or air-chamber, which evidently answers to the junction of the anterior and posterior chambers of the eye, as in cases of displacement of the lens the depth of the anterior chamber is greatly increased. Distinct traces of hematine or oxide of iron are to be seen diffused throughout the anterior portion of the eye, and at the latero-median junction of the iris and sclerotic is found a discoloration, which, though probably due to a disposition of the oxides of iron and manganese, bears a marked semblance to a hyphæma, or effusion of blood into the anterior chamber.

---

[1] Read before the Chicago Academy of Medicine, November 10, 1893.

I have searched the literature in the hope that I might find a similar case recorded, but my efforts have been futile. This, however, does not militate against the soundness of the conclusions reached. It may be argued that such a thing is preposterous in the extreme, but when we recall the fact that in certain pathologic condition of the human eye we find calcareous deposits, ossification, and other changes, as, for example, in atrophied eyeballs following panophthalmitis, iridocyclitis, and other destructive inflammatory conditions, and we often meet in enucleation with hardened eyeballs closely resembling stone in their general characteristics—so hard, indeed, that it is almost impossible to make sections of them. I would also cite the changes supervening upon amyloid degeneration of the conjunctiva, it being a noteworthy fact that ossification and calcification occur in the later stages of this affection. We also find in cases of cataracta complicata that the lens assumes a calcareous form, and approximates stone in hardness; and still further, in zonular opacity of the cornea we have calcareous depositions.

Now it seems no more difficult that an eye should petrify under the requisite conditions than that other parts of the human body which are just as prone to petrefactive changes should be thus metamorphosed, and we are aware that in rare instances the flesh, skin, and hair of an animal have been preserved for thousands of years, as in the ease of the mammoths entombed within the frozen mud-cliffs of Siberia. In these instances the animal matter has been more or less completely mineralized or petrefied.

The first question that naturally presents itself is: How are the remains of animals and plants preserved? The essential conditions are found only in cases in which the organic remains are protected from air and superficial decay—*e. g.*, over the bottom of lake deposits of silt, peat, marl, etc. Stems, branches, and leaves of plants, fruits, or seeds, may be carried into these places, as well as the bodies of land animals, insects, and birds; wild animals venturing on the more treacherous watery parts of a peat-bog are sometimes engulfed. The antiseptic qualities of the peat preserve such remains from decay until the more or less complete metamorposis characteristic of petrefaction ensues. Hence from European peat-masses many remains of deer and oxen have been exhumed.

The history of the fossil presented to you is of such a nature as to lend all of the requisite conditions for petrefaction, and its characteristic wholly support such an assumption. I regard the fossil as a metamorphosed eye that has suffered a rearrangement of its constituents, but with sufficient traces remaining to indicate its previous form and structure. The mere presence of water by reason of its universal solvent action necessitates solution of some of the more soluble portions of the eye, and as condensation ensues they may be re-deposited in a new form. This is a possible explanation of the absence of some of the otherwise normal constituents of the eyeball. Most animal formations are derived from the lower grades of the animal kingdom, such as the mollusca, the actinozoa, and the foraminifera; and the explanation of the greater frequency of petrefaction of marine formations lies in the fact of their submarine habitat, their possession of resisting shells; and the mere fact of their food-supply, consisting as it does largely of crustacea and fish, is in itself a factor conducing to a deposition of lime-salts in their several structures, which would favor petrefaction. On the other hand, specimens from the land very seldom find lodgment in subterranean graves, unless they be twigs, leaves, etc., which are doubtless blown or carried by the winds, and finding a watery grave, that predisposes to petrefactive changes, are accordingly metamorphosed and crystallized. Thus Kirwan says: "North of Quito there is a river that petrefies any kind of wood or leaves. The coral rock, though formed by continuous depositions of polyps, loses by degrees any distinct traces of organic structure, and acquires an internal crystalline structure by water-filtration through its mass, causing a deposition of lime carbonate, etc."

The eye may be that of a predatory animal, whose remains might readily find lodgment in a subterranean cavern, and thence be carried to a watery bed. Thus the British carboniferous rocks have yielded thirteen genera of labyrinthodonts (anthracosaurus, loxomma, ophiderpeton, pholiderpeton, pteroplax, urocordylus, etc.). These were probably fluviatile animals of predaceous habits, subsisting on fish, crustacea, and other organisms of the fresh or salt waters of the coal lagoons, the largest types measuring from seven to eight feet in length.

In conclusion, I will add to the foregoing remarks that the reasons for styling the fossil a petrefied eye may be expressed in the following:

1. Its history.
2. Its shape.
3. Its structure (showing as it does such a close analogy to the human eye).
4. Its appearance macroscopically and microscopically.
5. If it is not an eye, what is it?

I submit the question to your scientific minds for consideration.—*Medical News.*

THE TREATMENT OF THE VARIOUS FORMS OF CONJUNCTIVITIS AS PRACTICED AT THE GERMAN HOSPITAL.[1]

BY LOUIS J. LAUTENBACH, A.M., M.D., PH.D., PHILADELPHIA.

My connection with the Eye Department of the German Hospital dates back to a period of some three and a half years, during which time somewhat over five hundred cases of conjunctivitis have been treated in the clinic. This does not include the cases of hyperæmia of the conjunctiva or of symptomatic conjunctivitis, so often observed as a consequence of eye strain from refractive disturbances, nor are these cases recorded in the hospital reports, except as to their refractive error: The Eye Department of the German Hospital is under the charge of Dr. Charles S. Turnbull, under whom I serve as Chief of Clinic, and to whom I am indebted for much valuable aid and advice as well as encouragement.

---

[1] Read before the Philadelphia County Medical Society, December 27, 1893.

The table here presented gives the number of cases of all the forms of conjunctivitis presenting themselves at the clinic during the years of 1891, 1892 and 1893—a total of 452 cases, as compared with 317 in the years of 1888, 1889 and 1890, showing the clinic to be a growing one, although not rapidly so:

		1891.	1892	1893.	TOTAL.
Conjunctivitis,	**Acuta**	22	32	29	83
"	**Subacuta**	20	6	6	32
"	**Chronica**	29	30	36	95
"	**Blenorrhoica**	7	4	7	18
"	**Epidemica**	17	13	19	49
"	**Erysipelatosa**	[illegible]		1	1
"	**Follicularis**	8	3	15	26
"	**Phlyctenulosa**	8	9	23	40
"	**Trachomatosa**	31	22	29	72
"	**Traumatica**	5	6	5	16
Totals		147	125	160	432

The classification of the various forms of conjunctivitis caries with the ideas of different authors—no two seeming to use the same nomenclature—their varying views depending, in the main, on the different pathological opinions held by each. For instance, epidemic catarrh is by many classed as a simple acute catarrh. The classification here presented makes no pretense as to being strictly scientific, but will commend itself as being thoroughly practical.

Now, it is not my desire to take up each of these forms individually and study it separately and completely, but rather to indicate some general rules about the treatment; some few thoughts which have come to be very important truths, and to indicate, wherever necessary, any modifications or additions.

The first step in the treatment of all cases of conjunctivitis is necessarily the cleansing of the conjunctiva, not simply the ocular or the palpebral portion, but of the whole conjunctiva including the folds—the lower palpebral fold especially. This necessity exists with the most acute as well as the most chronic, the simplest as well as the most complicated case. It is the key-note of the treatment. If we endeavor to cleanse and do not succeed in thoroughly doing so, we may cure many of our cases, but will not get as prompt nor as good results, and many cases we will find it impossible to cure. For instance, while we may be successful with the simple catarrhs, we will often fail in the epidemic form, and in gonorrhœal conjunctivitis we will invariably fail.

How is the conjunctiva to be thoroughly cleansed? How is it best accomplished? My method is to invariably cleanse first by means of Peroxide of Hydrogen, which I use in full strength, 15 vol. solution (testing over 10 vols. invariably). Now the pure peroxide stings considerably when used on the conjunctiva, often inconveniencing the patient very much, and when the solution is markedly acid it is far more painful, and indeed, is then unfit for use in the eye. The reason that this remedy has, comparatively speaking, met with so little favor among eye surgeons has been mainly because of the marked acidity of many of the solutions. This acidity is not only a cause of much pain but, indeed, sometimes an element of danger, as the congestion of the conjunctiva occasioned, is sometimes sufficient to interfere with the proper nutrition of the cornea.

Having used peroxide of hydrogen steadily for a period of almost ten years, I feel it but right to indicate the basis of my faith. I have in these years used various brands of the solution. For a long time I relied upon the Marchand peroxide and found it fairly stable, but its acidity was so great as to prove a great bar to its use; indeed, very rarely could it be used in the eye without previously neutralizing the free acid. Later on I tried Bene's, and found this to answer my purposes very well, the acidity being still noticeable, however. Among others, which I tried some three years ago, was that manufactured by the Oakland Chemical Co., and I to-day rely mainly on that preparation It is fairly constant in the amount of Oxygen it contains; fairly stable; is not much deteriorated by moderate changes in temperature; and the amount of free acid present is very small. It tests beyond 10 vols. invariably, usually from 12 to 16 vols. At the hospital I employ the Rosengarten brand and find that it and the Oakland are much the same in their action. Between the two I can detect no marked difference. I lately tried Peuchot's, but find it entirely too acid to be used in the eye.

Of all the kinds I have employed, having experimented with upward of a dozen I can recommend for use in the eye only the preparations of Bene, of the Oakland Co., and Rosengarten's. The characteristics which these preparations have in common and which should be possessed by any peroxide employed, are first, invariably testing beyond 10 vols., preferably between 12 and 16 vols. of oxygen; second, in being fairly stable—not losing their oxygen upon slight changes of temperature; third, and most important: having little or no free acid present; the amount of acid should be as small as is consistent with the stability of the preparation.

By the use of a pure preparation, the entire conjunctiva can be most thoroughly cleansed; not only will the discharge on the surface be washed off, but that lying in the crevices and chinks will be decomposed and washed out.

A word as to the method of use. From 10 to 30 drops of the solution should be instilled at the outer canthus and the eye then closed, and with the fingers a degree of massage applied over the entire surface of both eyelids. Then the eye should be looked at, and, if necessary, a second, a third, and even a fourth application should be made. Often in trachomatous cases, after its application, it is well to evert the trachomatous lid, and, with the rubber end of an eye dropper, rub its conjunctival surface. The thorough application of the peroxide should invariably be followed by the liberal use of a saturated solution of boracic acid. This will wash out all the debris and soothe the possibly irritated conjunctiva.

This treatment I never intrust to the patient, but always do it myself, using it as often as necessary from twice a week to once or twice a day. Occasionally I allow a patient to use a weaker solution of the peroxide, from a three to an eight volume solution, but never stronger, used once or twice a day. The cleansing method that I advise the patient to follow is the liberal use of a saturated solution of boracic acid as a wash or eye bath, used almost invariably as hot as the eye can bear, from two to eighteen times a day, even every half hour in many gonorrhœal cases.

Having thus thoroughly cleansed the conjunctiva, we have a surface upon which we can apply our appropriate remedies and are sure they will have the maximum effect. Not that it will always be necessary to employ anything beyond the cleansing before indicated, as indeed we will find many mild cases of conjunctivitis yield through these simple means.

In cases of *acute conjunctivitis*, when further treatment is indicated, we direct the patient to use a mild solution of acetate or sulphate of zinc, or a solution of borax in camphor water, advising the hot boracic acid solution as a wash.

In *sub-acute conjunctivitis* we employ usually either the solution of sulphate of zinc or of copper.

In *chronic conjunctivitis* especially if there be much thickening of the conjunctiva, I direct, in addition to the treatment employed in the subacute cases, the use of massage on the eyelids three times a day immediately following the instillation of castor oil (the oil to be used after the eye has been thoroughly bathed with hot boracic solution and roughly dried). The persistence in this method has, in numerous cases, been followed by what might almost be termed marvelous results.

In *conjunctivitis blenorrhoica* or gonorrhœal conjunctivitis, the peroxide treatment is to be used regularly once a day, and in very virulent cases twice a day. It is to be followed by the boracic acid solution, and this in turn by a strong solution of nitrate of silver brushed upon the lids with a small pledget of cotton on a cotton holder. I never employ brushes as I consider them incapable of being kept clean. Upon the first visit, I usually use a solution of 60 grains to the ounce; on the second day, if necessary, I employ the same solution, or may even use a solution as weak as 5 grains to the ounce, or any strength between the two. Of course, in using such strong solutions, care must be taken to limit their action to the conjunctiva—not to allow a drop of it to touch the cornea, and to neutralize any excess of solution immediately. If there be much conjunctival swelling, especially if the circumcorneal conjunctiva, and particularly if this threatens the nutrition of the cornea, I scarify this freely in several places in lines radiating from the cornea. After the use of the nitrate of silver, I again wash with boric acid solution and send the patient home, with directions to wash the eye with hot boracic acid solution either every 30 or 60 minutes as circumstances demand, and to use 2 drops of a two grain solution of nitrate of silver twice a day, and report the next day. Since adopting this method I have not had a case to resist a cure for over seven days, and in one instance, had a perfect eye after three days. I invariably direct these patients to use smoked glasses, as they, in addition to protecting the eye from the dust, light and wind, prevent him from wiping them as much as he otherwise would.

Epidemic conjunctivitis is treated in much the same way, except that the peroxide and boracic acid solutions are followed by a solution of nitrate of silver of five grains to the ounce, and the patient is directed to bathe the eye with boracic acid solution every hour or two, and to use a one-grain to the ounce solution of nitrate of silver twice a day, and to wear smoked glasses.

In *follicular conjunctivitis* the cleansing is the same. This may often be followed by the application of the alum stick, or sometimes the follicles are opened, or castor oil may be used by the massage method; the patient is directed to use the hot boracic acid solution as a wash three or four times a day, and the castor oil after each cleansing; again, at times, I direct an ointmentof acetate of lead, one grain to the ounce, to be used in the lower lid at night. Of course, this is never to be ordered without cautioning the patient never to use the ointment for any other treatment than the present one, as it is never to be employed unless the cornea be intact.

In *conjunctivitis phlyctænulosa*, the cleansing is employed as above and is followed by the use of atropia, and this again, perhaps, by calomel. The patient is directed to use the hot wash four times a day with, perhaps, a weak solution of atropia and the yellow oxide of mercury salve at night, protecting the eyes by means of smoked glass.

In *conjunctivitis trachomatosa*, the cleansing is invariably very thoroughly employed, and any source of irritation, such as misplaced cilia is, if possible, removed; all trachoma granules present are opened and thoroughly scraped out, any contracting bands being superficially incised and redundant tissue, if present, removed.

After this, peroxide is to be employed; to be followed, if necessary, with alum, sulphate of copper, or nitrate of silver in stick. The patient is directed to cleanse the eye thoroughly and frequently with hot boracic acid; to, in some cases, use castor oil with massage, either alone or in connection with the yellow oxide of mercury ointment at night; treating sequelæ as they arise.

In connection with the above local treatment there should be employed whatever general treatment may be found necessary. This is indeed often of the utmost importance in this class of patients. We will not here enlarge upon this subject.

Each patient is a law unto himself and must be treated accordingly, but the key-note should be to rectify any abnormal conditions needing correction, and to restore the body to as nearly a normal one as is possible.

The above is necessarily but a brief outline. It has been presented thus with the object of calling attention to what I deem the foundation stone of the successful treatment of inflammation of the external parts of the eye—cleanliness and thoroughness. It is a truth which holds good in the treatment of the cornea as well as the conjunctiva. I wish to call attention to the method of obtaining cleanliness—the most thorough with which I am acquainted; and secondly, to the use of massage as one of the efficient but little used methods of treating conjunctival affections, especially conjunctival thickenings. Medicines prepared as ointments or as solutions in some oily menstruum lend themselves readily to this mode of treatment; thirdly, I have desired to call attention to the wonderfully successful results of the above treatment of gonorrhœal conjunctivitis; and fourthly, I have wished to call attention to the method in phlyctænular cases, as upon numerous occasions we have had cases which having proven unusually intractable at other hospitals, but have readily succumbed under our method. In cases of phlyctænular diseases involving the cornea, this has been more often and more thoroughly illustrated than in the simple conjunctival cases. I recall two such cases now under treatment. One of a boy of twelve, who in a month, has obtained a better result than had been accomplished at any time during the past ten years of almost continuous treatment at other institutions in this and other cities. Upon several occasions, he was house-patient at various eye-hospitals. The other, a parallel case, is the one referred to in my paper on phlyctænular conjunctivitis in the *Rhode Island Medical Society Monthly*, November, 1893, page 530.

The conclusions which I have reached as a result of my hospital work are: that in these cases, thoroughness, especially in cleanliness, is essential; that the entire conjunctival cavity must be effectually cleansed and prepared for any such curative agent which we may desire to use; and in addition to this, the patient should be directed to keep the eye as clean as is possible, but necessarily he can not do this as thoroughly as we can. Every case should be seen as often as necessary; in cases of doubt, have the patient come rather too often than not often enough. If necessary for the welfare of the case, donate some of your time at your office; do for him all you can and always as thoroughly as necessary, even more so If you fail at all, fail in doing for him too much. The results thus obtained will sometimes be unexpected, but ever gratifying.—*Transactions Philadelphia County Medical Society.*

OPHTHALMOPLEGIA[1]

BY GUSTAV DRESEL, M.D., SAN FRANCISCO.

My excuse for presenting this case to the Society is not only its intrinsic interest to an oculist in particular, but to a general practitioner as well. The patient was handed over to me on the 29th of last month by Dr. Morse, the surgeon of the German Hospital, to determine whether his eye symptoms pointed to a fracture or any lesion in the base of the cranium. The history of the case is, in short, this:

Mettewald F., æt. 41; married, laborer. Was accidently struck on the back of the head, on September 1, by an elevator. The blow was received on the cranium at a point corresponding about to the articulation of the occipital with the posterior part of the parietal bone, tearing the scalp and tissues and exposing the bone. Whether it was fractured or not is doubtful, as the wound had been sutured in the Receiving Hospital, and it was three days before the case entered the German Hospital. The wound being perfectly aseptic, the sutures were not removed for examination. Patient says he had, however, been unconscious (not knowing of the injury), and though he could not walk from the shock, he could freely move his hands. There were lacerations about the face, and there was considerable suggillation about both eyes, and he is said to have had hæmorrhage from both ears. Patient was put to bed and ice to head and ice-compresses to face were ordered.

---

[1] Read before the San Francisco County Medical Society, Oct. 10, 1893.

When I saw the patient for the first time he presented materially the same general appearance and symptoms as at present; his intellect and his speech are *perfect;* his hearing, his sense of smell and taste are perfect, as well as the movements of his tongue and those of the muscles of his face. Examining his eyes, we find his left eye perfectly normal in every respect; every muscle of the eyeball is intact his pupil reacts readily upon *light and convergence*, and his power of *accomodation* is normal; the back-ground is normal and the eyesight is $^{6}/_{\text{VI}}$. His right eye, however, shows a drooping of the upper lid, a marked loss of movement of the eyeball *downward* as well as downward and outward, with rotation of the upper part of vertical meridian *inward;* a marked loss of upward movement, as well as upward and outward, with the rotation of the upper part of the vertical meridian *outward;* and a loss of movement of the eyeball *outward;* on the other hand, the movement *inward* remains *almost* normal. At the same time we notice that the size of both pupils is the same, that the right pupil reacts perfectly upon *light* and *convergence*, and upon examination we also find his power of *accomodation* normal. The back-ground is normal and the eyesight almost $^{6}/_{\text{VI}}$.

Recapitulating: We have faund a paresis of all the muscles of the eyeball, innervated by the oculo-motorius, *except* the *internal muscles*, viz., the sphincter pupillæ and tensor choroideæ, and the rectus internus; we have also found a paresis of the abducens, and of the trochlearis (or pathetic), while the muscles of the left eye are perfectly sound. This diagnosis, made from a rough examination of the movements of the eyeball, is perfectly sustained by a more accurate examination of the *diplopia* present, which, although apparently very complex, is however, simple, if we bear in mind, that paralysis of the abducens as well as of both obliqui, causes *pathological convergence*, and in consequence *homonymous diplopia*; while a paralysis of the rectus internus, rectus superior and rectus inferior causes *pathological divergence*, and in consequence *crossed diplopia*. In this case, where the rectus externus is paralyzed, while the rectus internus is almost intact, we will consequently have *homonymous* diplopia in the whole field of vision. We find, in holding the candle straigt *downward*, homonymous diplopia, image of *right* eye lower than that of the *left;* moving the candle to the left for fixation *downward* and *inward*, we have a marked increase in the *vertical* distance of the two images, and the image of *right* eye apparently nearer to the patient; moving the candle to the right for fixation *downward* and *outward*, we have a large lateral distance of the two images, on account of the paresis of the rectus externus and but a slight increase of the vertical distance of the two images—a sure sign of paresis of the obliquus superior and rectus inferior. Holding the candle straight upward, we have homonymous diplopia, the *image* of the *right* eye *higher* than that of the left; moving the candle to the left for fixation *upward* and *inward*, whe have a *well pronounced increase* in the *vertical* distance of the two images (*Vide: Mauthner.*—Læhmung des musculus obliquus inferior.—*Wiener Med. Blætter*, 1893, No. 18, 19, 20), while moving the candle to the right for fixation upward and outward, we have, besides the large vertical distance of the images, but a *very slight* increase of the vertical distance of the two images—a sure sign of paresis of the obliquus inferior and of the rectus superior.

This, then, is a well pronounced case of *ophthalmoplegia exterior unilateralis imperfecta*. Now, let us determine the seat of the lesion to the III, IV and VI nerves; it may be situated either *within the orbit*, or *within the cranial cavity*. The first we may exclude immediately, as the *internal* muscles of the eye are intact, and as there is not the least sign of an affection of the muscles, *as such*. The second, the intercranial lesion, may be situated at the base of the skull, that is, anywhere in the course of the nerves after leaving the brain up to their entrance into the fissura orbitalis superior—in this case an absolute impossibility, as the internal muscles, viz., the sphincter pupillæ and accommodation muscles, are perfectly intact; and as the III, of course, after leaving the brain forms *one* nerve. Or the lesion may be situated within the brain itself, either involving the fascicle of nerve-fibers passing from the cortex to the nuclei, or involving directly or indirectly the nuclei themselves of the III, IV and VI nerves. If the first were the case, we would have a hemiplegia of the opposite side, of which there has never been the least sign, and many other symptoms besides. So, by exclusion, we find that the severe blow on the back of the head of our patient has caused a hæmorrhage in the region of the *nuclei* of the III, IV and VI nerves *of the right side.*

Now the nucleus of the III extends from the posterior end of the floor of the 3rd ventricle backwards along the floor of the aquæductus Sylvii to below the posterior corpora quadragemina, immediately followed by the larger ganglionic cells of the nucleus of the IV nerve—so that Meynert even speaks of one oculomotorio-trochlearis nucleus. The nucleus of the VI lies about in the center of the floor of 4th ventricle below its gray surface. Our diagnosis is sustained by another important clinical symptom, which points to a lesion of the 4th ventricle, namely, the patient complains of an increase in the quantity of urine he passes. The specific gravity of this urine is 1010, no sugar, no albumen. Drs. Hassler and von Adelung, the internes of the German Hospital, have carefully measured the quantity of fluids the patient gets within 24 hours, and the quantity of urine passed within the same time, for several days in succession, and have found that his urine averages about five pints daily—℥xx, more or less, in excess of fluids taken.

What conclusions may we draw from this case? that there exists a nuclear unilateral ophthalmoplegia, caused by the disease of the nuclei of the nerves of one side, and that, at least in this case, *the nuclei of all the motor nerves of each eye are situated on the same side as the respective eye.* The trochlearis of this patient does not completely decussate in the substance of the velum medullare anterius with that of the other side, as has been authoritatively asserted by *Kœlliker*, Stilling and many others; nor does it do so partially, as asserted by Henle, for the obliquus superior of the left side is perfectly intact and we cannot possibly believe that the nucleus of the IV should have remained untouched by the lesion, which struck the neighboring nucleus of the III, or that the nucleus of the IV on the left side should alone have been affected. Nor is it probable that, in our case, there be a direct connection between the nucleus of the IV on one side and part of the fibers of the III and IV of the opposite side. It is in fact difficult to comprehend how unilateral ophthalmoplegia can ever be the consequence of disease of the nuclei of the same side, if there should exist a total or partial decussation of the nerves.

In this case the muscles most affected are: the rectus inferior and obliquus superior; then the levator palpebræ superioris, the rectus superior and obliquus inferior; while least affected is the rectus internus, and not at all the sphincter pupillæ and accommodation muscles. We may, therefore, infer from this, with great probability, that the centers for the rectus inferior and obliquus superior are situated nearest to each other, as well as those for the levator palpebræ superioris, the rectus superior and obliquus inferior; and again, those for the rectus internus, sphincter pupillœ and tensor choroideæ. If we now examine the location allotted to the separate centers for the different muscles of the III by Völckers and Hensen, by Kahler and Pick, and lately by Staar and Perlia, results obtained by these authors chiefly from their anatomical and experimental studies, we find that our case corresponds best with Kahler and Pick's results. The latter place most anteriorly in the posterior end of the third ventricle the centers for accommodation, and that for the sphincter pupillæ; next to the last on the medial side of the floor of the aquæductus Sylvii, that for the rectus internus; and on the lateral side, those for the levator palpebræ superioris, the rectus superior and obliquus inferior; while again, to the medial side nearest to the nucleus of the trochlearis, that for the rectus inferior.

In conclusion, let us see how it is possible that a hæmorrhage should have affected the nuclei of all the motor nerves of the eye, with the exception of the centers of the internal muscles of the eye. We know that the vascular supply of the cortex of the brain is quite different from that of the base; the former is fed by arteries with manifold anastomoses, while the latter is supplied by end-arteries, according to Cohnheim. Now it has been shown that the region to which the centers for accommodation and pupil belong is fed by the ramus communicans posterior, while that of the centers of the external muscles is fed by the arteria cerebralis posterior.

In regard to the prognosis of this case, I can but say with *Mauthner:* "The prognosis of nuclear paralysis due to traumatic hæmorrhage is unknown."—*Pacific Medical Journal.*

THE EYE TREATMENT OF EPILEPTICS

BY A. L. RANNEY, M.D.

I would formulate my conclusions, as the total result of my observations of the eyes of epileptics, as follows:

1. In epilepsy I regard an examination of the eyes (for errors of refraction) and of the eye muscles (for heterophoria) as the first and perhaps the most important step toward a search of sources of reflex nervous disturbance.

2. No final conclusion should be reached regarding the presence or absence of heterophoria until sufficient time, patience, and skill has been bestowed upon the investigation by one who is thoroughly familiar with and practices the *later methods* for the *determination of "latent" heterophoria.*

3. All preparations of bromides and other drugs that tend to control the seizures should be withheld, as a rule, from an epileptic patient until all possible sources of reflex irritation have been scientifically sought for and, as far as possible, relieved.

There may be justifiable reasons, to my mind, for *exceptional departures* from this rule; but I wish to emphatically raise my voice here in protest against the prevalent system of drugging epileptic patients from the date of the apperance of the first fit without any attempts being made to ascertain what the causes of the epilepsy may be.

4. I strongly advocate the *employment of atropine in every case* before a final decision is reached regarding the refraction of an eye.

I also believe that in epileptic cases it is wise to insure a full correction of any existing astigmatism (by glasses to be worn constantly in well-fitted spectacle frames), and as near a full correction by spherical glasses of any latent hypermetropia that is detected as the patient can be made to tolerate, even if atropine has to be instilled at intervals into the eyes of the patient for several weeks to prevent a return of ciliary spasm.

I have observed many cases of chronic epilepsy that have been relieved of all convulsive seizures so long as the full effect of atropine upon the ciliary muscles was maintained.

5. *No promises that absolute cure can be effected by eye treatment should ever be made to an epileptic;* but it is usually safe for the physician and patient to hope that a radical correction of marked heterophoria and abnormal refraction will eventually be followed by decided and permanent benefits.

6. The results in all cases thus far treated by me seem to warrant the conclusion that at least *ninety per cent. of chronic epileptics have been better without bromides,* after a satisfactory correction of their eye defects, than they ever were when subjected to the influence of drugs. *Some have apparently been cured.*

It should be remembered that a victim to chronic epilepsy who is rendered by any treatment as free from attacks without the bromides as when under their deleterious influence has been *very markedly benefited;* again, that if a marked diminution of the attacks has been effected, the patient has double cause for gratitude; finally, that if the attacks are arrested *in toto* without drugs, it is to-day one of the most remarkable facts recorded in medical literature.

7. In cases where negative results have been observed in spite of a satisfactory investigation and correction of marked heterophoria and abnormities of refraction, I would deem it wise before resorting to drugs for epileptic seizures to search for other sources of reflex peripheral irritation (such, for example, as bad teeth, phimosis, rectal or uterine disease, scars, etc.).

Furthermore, the detection of chronic kidney disease, syphilis, organic brain lesions, and depression of the skull, is most important prior to the beginning of eye treatment or a search for other forms of peripheral reflex disturbances.

8. The treatment of heterophoria by *prismatic glasses alone is not curative;* nor, in my opinion, are very marked beneficial results to be expected from them. Prismatic glasses are valuable aids, however, in determining the existence and amount of "latent" heterophoria prior to the radical correction of such defects by graduated tenotomies.

9. *The duration of the eye treatment of epilepsy varies with the eye problems encountered.*

The establishment of orthophoria is not commonly effected in epileptics inside of one year; and long intervals of rest between the surgical steps may be demanded and thus extend this limit of the time to two or even three years.

For the past five years I have refused to begin work upon the eye of any epileptic unless I was assured that I could control the patient for a period of at least twelve months, and see the patient at such intervals as I deemed necessary during that period. It is better in this work "to be sure than sorry," and experience has taught me that it is much safer to do it slowly than rapidly.

With a full knowledge of the method, its intricacies, and its difficulties, *conclusions should never be too hastily arrived at* in any given case. Those who have the largest experience may occasionally make mistakes in judgment when a peculiarly complex problem is presented for solution. How much easier is it, therefore, for one with a limited experience to fall into error! The story is told that a selection for a pilot of a vessel laden with precious merchandise which was to enter a harbor full of sunken ledges and sandbars was once being made. One by one the applicants told a tale of uninterrupted successes. Finally one pilot was accepted simply because he said, "I ought to know the channel, as I've wrecked a ship on every rock in this harbor."

So it is with many cases of epilepsy, chorea, insanity, and kindred nervous affections. These patients have, as a rule, acquired and constantly practiced from birth *certain faulty* *combinations of the various eye muscles* in order to enable them to use the eyes together.

They are often able, by the aid of such unnatural combinations, to *simulate* a condition of apparent equilibrium of adjustment of the eyes, although a very serious expenditure of nerve force may be demanded of them in order to do so. They are naturally unconscious of the eye-strain, because they think everybody does, as they do, in order to see. They often have no eye symptoms. They practice these "tricks of adjustment" instinctively, not as an act of volition; and they have generally to be taught, by the aid of prismatic glasses and other recognized steps, to abandon them and thus to disclose the actual maladjustment of their eye-muscles which has entailed upon them this long-continued leak of nerve force.

10. Too much stress can not be laid upon the importance of accurately centering all spherical and cylindrical glasses to the pupils when prescribed.

An imperfectly fitted frame may prove a source of great injury to a patient.

Moreover, a decentered glass may often lead a careful observer into serious error respecting heterophoria.

It is remarkable how few opticians are properly educated in the fitting of frames. A casual glance at the eye-glasses and spectacles worn at social gatherings and in street cars, theatres, etc., by people able to purchase of the best opticians, will demonstrate the statement that but a very small percentage wear glasses that are even an approach to the proper relationship to the pupils.

It has been a rule in my office for years to allow no patient to wear a glass that I have not personally tested and passed upon as properly ground and centered to the pupils. I also instruct each patient regarding the necessity of having the frames straightened when bent or whenever the lenses tend to droop.

I do not believe in decentering any glass, even intentionally to take the place of a prism.

Some months ago a patient took the long trip from Tacoma to New York in order to consult me regarding a sudden change in the vision of one eye that greatly alarmed him. I had previously given him for constant wear cylindrical glasses in a spectacle frome and he had changed them to a pair of eye-glasses. The bending of the frame had changed the axis of the cylinder of the right eye. Within a space of five mintes this was corrected, and all his alarm disappeared at once because his vision immediately became normal.

11. The objections that are raised before patients by many physicians and some oculists to the performance of a graduated tenotomy upon an eye muscle "because of its risk, danger of overcorrection, etc.," too frequently cause unnecessary alarm and often prevent patients from obtaining the relief that is within their grasp, and which prismatic glasses have not and will not afford.

Since the employment of cocaine as a local anæsthetic the patient *suffers no pain during this operation* and but little discomfort after it.

Furthermore, the operation as now performed does not necessitate any confinement to the house, and all surgical dressings to the eye are avoided.

That the successful operator must possess skill and a high grade of technique (acquired by constant practice in that special line of surgery) is apparent; but I believe that the danger of overcorrection is very small in operating properly for heterophoria, and, in the hands of an expert, an overcorrection is very readily controlled and rectified. I do not recall a case within the past eight years where I have had a moment's anxiety resulting from an overcorrection, although I have in that time performed at least one thousand graduated tenotomies upon the muscles of the orbit.—*New York Med. Jour.*

THE TREATMENT OF BLEPHARITIS MARGINALIS BY HYDROGEN DIOXID.

BY S. C. AYRES, M D., OF CINCINNATI, OHIO.

The treatment of blepharitis marginalis is often unsatisfactory and disappointing. Relapses frequently occur, and remedies seem to lose their effect, and at times even to act unfavorably. It is true that much of our success depends on the faithfulness of the patient or of his parents in carrying out the treatment at home. Much also depends on the physical condition of the patient, and this should always receive careful attention. Anomalies of refraction seem to play an important rôle in perpetuating the disease, and these also should be carefully corrected. But aside from these considerations, the treatment is often prolonged, taxing the patience of the physician as well as of the client.

The remedies prescribed for the relief of this disease are numerous, and all have met with more or less success. During the past year I have used with great satisfaction hydrogen dioxid in the treatment of this disease. I was led to its use by some experiments in cases with suppurating rings around the cilia. After removing the crusts and applying the dioxid, there was a bubbling and boiling effect for a while, which soon subsided, leaving the ulcerated surface whitened, as if a solution of silver nitrate had been used upon it. The application was almost painless, and the lid was left clean and free from pus or scales.

These experiments were followed by a general adoption of this method in nearly all cases, but especially in those with ulcerations along the lid-margin. My experience in a large number of cases justifies me in recommending this treatment, so that others may give it a trial. The manner of its application is as follows: The larger crusts should first be removed or scraped off, after having been softened by tepid water. Then a little cotton is wrapped tightly around a Japanese tooth-pick, which is dipped into the dioxid in a little dish. The cotton is then swept over the entire edge of the lid. The characteristic bubbling will follow, and the application is repeated until the bubbling ceases. The ulcers will then present a whitish appearance. If care is taken, and the cotton is not too freely saturated, none will come in contact with the conjunctiva. In order to obviate all pair, a few drops of a 4 per cent. solution of cocaine can first be instilled into the eye. This treatment should be repeated every day. The remedy is one that any intelligent person can apply at home, and one from which there is no danger. My experience with the use of salves and ointments is somewhat disappointing. They often cause unaccountable irritation, and on this account are unreliable. In the method advised a clean remedy is used, which acts promptly and efficiently. By its chemic action it destroys the germs which cling so closely to the edges of the lids. It is not a cure-all or a specific, but I certainly have had the happiest results from its use.—*Medical News.*

DR. LUCIEN HOWE.

Dr. Lucien Howe, of Buffalo, was elected a member of the Ophthalmological Society of the United Kingdom (Great Britain and Ireland), on December 14, 1893. This exceptional honor, we believe, has been conferred in but one other instance on a resident of the United States.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. MARCH, 1894. No. 3.

ORIGINAL ARTICLES.

DOES HYPEROPIA BEAR A CAUSATIVE RELATION TO STRABISMUS?

BY C. M. HOBBY, M.D., IOWA CITY, IA.

When a given result does not always follow the alleged cause; when the alleged cause is frequently absent when the result occurs; when the alleged cause may not only be absent, but a condition acting directly opposite present, and the result follow; when a diametrically opposite result, sometimes follows when the alleged cause is present; we have a right to doubt the causative relation, even though the alleged cause and result are co-incidently present in 77% (Donders) of the cases that occur. The rapid strides of physiological optics have led to the acceptance without question, of many theories having their foundation in the consideration of the eye purely as an optical apparatus, to the neglect of stuctural and vital conditions. Amongst other and similar theories, the consideration of the function of binocular vision as a matter of innate, or inherent, adjustment of the movements of the two eyes, in pursuance of the dictates of a "nerve center" which compels convergence in exact ratio to accommodation, seems unwarranted by analogy, and unsupported by facts.

Landolt in his treatise on "Refraction and Accommodation of the Eye" (Am. Ed., p. 357) referring to Mauthner's explanation of some of the above obstacles to the full acceptance of Donders theory prefers "to acknowledge that many cases of convergent strabismus are still beyond our comprehension." But the trouble with Donder's theory is, that having found a majority of the cases of convergent strabismus with H. he assumes that there must be a causative relation, and proceeds to an explanation founded on instinctive action, and on experiments with those who have learned to use both eyes

If we examine carefully the relation between accommodation and convergence, we shall find that it is principally an acquired function, that as it naturally exists, without education, it is irregular and incomplete, like the grasping of an abject with both hands; that a child, born with a blind eye, does not approach towards fixation of the object, discerned by the other eye, but instead usually has some considerable divergence, whether the seeing eye is emmetropic hyperopic or myopic; such an one may, but does not always, stiffen up the muscles of the blind eye under the stimulus of accommodation. Again, we usually find that the eye becoming blind after the establishment of binocular vision, ultimately becomes divergent, and fails to approach the fixing point, whether the seeing eye have E.H. or M.

The function of vision itself, in complete character, determining distance, depth, solidity, concavity and convexity, etc., is the result of acquired experience in interpreting retinal images.

The child acquires binocular vision as it acquires the use of its hands, by practice, only in the case of vision the training of two seeing eyes goes on together, and the first training of the hands is to use one at a time; the eyes, during waking hours, are constantly practiced and, under normal conditions, they become very expert; but it is worthy of consideration, whether their possibilities of associated action, are much greater than the fullest developement of the musclar functions of the hands and fingers in coincindent work, as is examplified by musicians.

The eye, at muscular rest, normally takes a position so that the visual axes are divergent, even squinting cases usually show divergence when fully etherized; the blind do the same. Tests made by covering one eye during acommodation of the other, so made as to watch the effect, usually show an attempt at co-incident fixation, even hyperopes generally approximate closely to the proper direction, but with all it is but an approximation, with the uncovering, readjustment follows, just as when, with the eyes closed, an attempt is made to bring the fore-fingers of the two hands into quick contact end to end from a little distance, a close approximation is made, which improves by practice, but is not exact, or as when an attempt is made to touch with the eyes closed a determined mark upon paper.

Many persons can direct their mental effort towards the retinal image of one, the other, or both eyes at will; with a slightly colored glass before one eye, they can with both eyes open, see the field with one eye through the glass colored, or with the uncovered eye uncolored, or with both eyes tinted, this subordination of one eye, at will, is a common practice with those that use the microscope, engineers with the transit and ophthalmologists with the ophthalmoscope; this action is undoubtedly the same as the so-called suppression of the visual image by the strabotic patient.

It is conceivable that trivial circumstances in early life may lead to this action on the part of the developing child, and in H. and Ah. the difficulty in securing a sharp image, even of a straight line, is greatly in excess of that in E. and M. The muscular action and relationship to other muscles in converging strabismus is not comparable to paralysis of opposing muscules sometimes exhibited, as in talipes; but, in the early years at least, there is the hypertrophic developement associated, in other voluntary muscles, with repeated action, indicating use in excess of the ordinary work of the eyes in convergence; and while this is mot manifest in the squinting eye, it is also present in the fixing eye; later on, the external excursion becomes limited. We find then that in converging strabismus, the squinting eye does not assume the position of repose, but shows the result of muscular activity; action not rest is the operative condition. Where the mental action in interpreting the retinal image is directed to one eye alone, the action of the other in converging, when the first fixes a near object, is not co-ordinated by the results of repeated experience; (usually also its movement is above or below the point of fixation,) and in the absence of binocular vision no inducement exists for a rectification of position. To use a comparison drawn from Donder's theory, the command for convergence emanates from the brain, the seeing eye responds to it and arrests its movement at the point of fixation, the non-seeing eye responds and in converging strabismus passes on, (not always respecting the axis of movement of the other eye). The above explanation applies equally to divergent strabismus, only in divergent strabismus, the dis-used eye fails to act as strong as its fellow, fails to develop the hypertrophy of the muscle. It applies to all forms of associated refractive conditions except perhaps those cases somewhat rare, in which convergence is associated with myopia of very high amount. In thus attributing strabismus to the habit of monocular vision, the relation of accommodation to convergence is by no means rejected as a factor in the developement; only as an acquired not an innate relationship, it is subordinated to the position of helping to increase a strabismus already acquired. That convergence is not usually performed in exact ratio to accommodation, may be demonstrated very easily, as follows; let one fix their attention upon a star, then cover one eye, suddenly removing the cover the star will be seen doubled and the second star will make a very quick movement of readjustment, this movement is usually in a curve. Sometimes by careful watching, this movement of rectification can be seen by others, and at short range. The movement is not so simple as the release of over-convergence. When a strabotic patient looks from a distant object to a near one the convergence is at first, and may continue, much in excess of what the relations between accommodation and convergence would require; here the seeing eye is already accommodated for a point and if the action were simply in relationship to the additional accommodation required, the convergence added would be much less than actually occurs. Diplopia is predicated by many writers of the first stages of convergence, but this apparently on insufficient data; as is also the assumption that strabismus is always or usually alternating at the beginning. Alternating squint occurs when the retinal images are equally good in both eyes, (or perhaps it would be better to say when they are *nearly* equal.) It is in alternating strabismus that the "suppression of the retinal image" or the concentration of mental effort, is most marked.

Granting that this concentration of the mental effort upon the image of one eye at a time, which is a function latent in all is the acting cause of strabismus, the methods of exciting this function into undesirable activity, come next to be considered.

It is easy to see that the art of concentrating the mind upon the image of one eye, so readily acquired in adult life may be induced by apparently trivial causes in early childhood and become habitual; thus the careful protection of the eyes of an infant in the cradle, leaves the child often to practice its forming vision with only one eye; sometimes the customary position of the child in the room, or the method of carrying, may do the same, aud to these causes observers of the past have ascribed the production of strabismus. Temporary reliance upon monocular vision[1] may frequently be caused by the diseases of infancy, general and local; in general diseases by the restraints of position, and in minor troubles with the eye, by the swelling, soreness or bandaging, leading to the same habit of monocular vision. Under ordinary circumstances of good and equal vision of the two eyes when the temporary inducements to use one eye at a time have passed, the advantages of binocular vision prevail[2], and no strabismus is left behind, or, as happens sometimes, the squint which had become noticeable disappears; but where refractive errors of considerable amount exist, or where the inability to secure a sharp retinal image in one of the eyes persists for a long time, as in cases of phlyctænular keratitis, or when, as in anisometropia a decided preference in visual acuteness exists, then strabismus becomes almost certain. In high grades of myopia the only object of which a perfect image can be formed upon the retina is the nose, and hence in these cases the physically strong develop convergence and the weaker divergence. Clinical facts can be adduced to support almost any theory, but it is none the less important to recall, that muscular training, and interference with the selection of one eye for work, is capable of overcoming squint and securing binocular vision, precisely as claimed by the surgeons who treated these cases before the day of Donder's theory.

[1] Binocular vision is present in only a small proportion of the species of mammalia.

[2] There exists however an instinctive relation between the action of symmetrical muscles on the two sides, and even between the homologous muscles of the upper and lower extremities; the infant at first opens and closes both hands in unison and moves the arms and feet together. In the eyes, the up and down and right and left movements are the earliest co-ordinated movements.

CORNEAL TRANSPLANTATION.—THE CAUSES OF FAILURE, AND THE REMEDY.

BY W. J. COLE, M.D.,

Oculist to the Evansville Eye Infirmary.

The results of corneal transplantation, by what may be called the trephine method, have been so unsatisfactory that few, if any, deem it wise to continue their efforts in this direction.

By a close study of the history of these operations the causes of failure are quite discernable; and I am of the opinion that the advancement of ophthalmic surgery will, in the near future, lead us to change the entire mode of procedure, as well as the instruments employed in performing it.

In this day of advanced antisepsis the question of union or healing needs no special attention here. We all get union in a per cent. about equal to that obtained in other plastic operations; but because of later changes our grafts become opake, and perhaps atrophy sets in, within from three weeks' to three months' time.

The discovery of the causes of this opacification of the graft and their successful removal is all that intervenes between us and our triumph.

Putting aside the incidental or contributory causes for the present, none are likely to dispute the affirmation that the opacity is a result of the mal-nutrition of the graft.

It sometimes begins before, and at other times soon after, all inflammatory activity in the eye has subsided. It usually heals well, and remains clear as long as the vascular excitation is active, and only so much longer as it finds itself able to draw sufficient nourishment through the very narrow band of cicatricial tissue with which it is surrounded.

To me it is evident that it obtains very little nutriment through Descemet's membrane. The functional power attributed to this membrane of carrying nutritive elements to the stroma of the cornea, is greatly over-rated, for I have removed nearly the whole of it myself without interfering in the least with the vitality or clearness of the cornea. If the aqueous be allowed to escape and a part of the membrane be removed, Nature will have supplied a good endothelial substitute equal to every demand by the time the aqueous is again secreted. I am so thoroughly convinced of the truth of this position that I exclude all consideration of this membrane in deciding upon a proper subject for operation.

It has been suggested by some that in this operation all parts of the cornea should be removed except this membrane, leaving it alone intact.

In the first place this procedure is impracticable, and can not be executed except in theory; and, in the second place, nearly all eyes requiring the operation have a fibrinous exudate deposited, in greater or less abundance, upon the inner surface of the membrane which would render the operation a failure so far as vision is concerned, even though the mechanical execution of the operation could be successfully accomplished.

Descemet's membrane is a true elastic membrane covered on the inner side with endothelium, and if it be lacerated it will prove its elasticity by curling up at the lacerated edges. Therefore, apart from its endothelium it is an osmotic membrane, and the functions we have attributed to the membrane really belong to its endothelial covering.

It is also important to remember that the corneal parenchyma is devoid of bloodvessels except a crown of vascular loops extending from one to three mm. within the sclero-corneal junction. But within this vascular crown the vessels are comparatively large.

These are important facts to be remembered in our search for the causes of failure in this operation, and the remedy to be adopted.

THE CAUSES OF FAILURE.

The operation was made too easy by the instrument that was offered for it performance.

I refer to the corneal trephine, an instrument that cuts through the cornea at nearly right angles to its surface, and at a distance of two or three mm. from the sclero-corneal junction.

This manner of incision gives the least possible surface for union, and also the least chance for the establishment of nutritive currents, whether these currents be by endosmosis, imbibation, or vascular encroachment.

An eye operated on by this method shows a ring of cicatricial tissue surrounding the central, and therefore all the important visual part, of the cornea; and on either side of this ring there is non-vascular corneal stroma.

This cicatricial band, like other scar tissue, is more dense, and, therefore, less pervious to nutritive material than normal tissue.

This condition alone is sufficient to place the life of the graft in great jeopardy, and is one of the prime causes of the many failures already made and recorded.

A LAW OF PLASTIC SURGERY VIOLATED.

Another cause of failure is found in the fact that the portion of cornea trephined from the animal's eye is made to exactly fit into the aperture made in the patient's cornea.

This violates the most important law of plastic surgery, by which we are required to cut the graft from one-fifth to one-third larger than the wound to be covered by it.

But the surgeons have not been at fault in this. The fault lies in the instrument used in cutting the aperture and the graft.

The shape of the edges of the wound, both in the eye and in the graft, is such as to make it impossible to obey this rule and still obtain any reasonable degree of coaptation between the surfaces to be united.

If the graft were cut with a diameter but one-fifth greater than that of the corneal wound the graft would be so cupped by coaptating the outer edges smoothly all round that the inner edges would be at least 0.5 mm. apart, leaving an open triangular wound all around with its base inward. If such a wound should heal, which is very doubtful, it would be filled with cicatricial tissue; in which we should lose as much by increased interruption of circulation as we should gain by the increased size of the graft.

For these reasons, no doubt, ophthalmic surgeons have been content to make the graft equal in size to the wound to be filled by it, and have, in every instance so far as I have learned, met with ultimate failure and humiliation.

CONTRACTION OF THE GRAFT.

From the contraction of the graft several evil results are to be anticipated. If we suppose it to contract but one-fourth, or, perhaps, one-fifth of its diameter in the process of healing, this would cause considerable traction upon the surrounding tissue, and keep the graft continually on the stretch, which could not fail to interfere very greatly with its nutrition. With this cause superadded to that of a misplaced cicatrix it would seem marvelous if degenerative changes did not take place in it.

We are also to expect a shallowing of the anterior chamber, not from the bulging forward of the lens and its ligament, but from the recession of the cornea. But the ultimate result can but be the same, except in the latter case the anterior chamber may be entirely obliterated, which interferes with the free and normal movement of the iris. We would also expect this condition to cause a dangerous increase of tension in the eyeball, both by the actual decrease of the intra-ocular space by the contraction before mentioned, and by plugging up the angle of filtration, and thus preventing the normal circulation of the intra-ocular fluids. Then we should have a serious case of glaucoma in which an iridectomy would give little promise.

It will be noticed that all of these sequelæ add their potency as direct or indirect causes of the mal-nutrition of the graft that ultimates in final opacity.

Whether the trephining method would give any better results if an instrument were used large enough to cut through the apparent sclero-corneal junction is undetermined. It would at least place the cicatrix in the most vascular, and therefore the most favorable point, while all the other causes of failure would still hold against it.

Furthermore, the dangers of trephining at this point are much greater owing to the close proximity of the iris, and the almost certainty of wounding it and causing serious hæmorrhage and iritis. So it appears that the slight advantages promised, scarcely compensate for the increased danger.

From all points of view it seems better that all trephining methods be discarded, and means devised that will reduce the causes of failure heretofore to a minimum.

It now seems that nearly, if not all, those who have operated by this method have already abandoned it, and the arguments advanced here come rather in the nature of a justification of their action; and they are offered also for the further purpose of deterring others from attempting it by this method.

THE REMEDY PROPOSED.

I would suggest here that the cornea is a tissue of low vitality, perhaps as low as any in the body except the membrana tympani, and requires but little nutriment to sustain it. For this reason we ought to be exceptionally successful in transplanting it.

And we certainly shall be, when we shall have discovered the proper method and recognized and eliminated, as far as possible, every cause of failure as indicated by past experience.

In the selection of a subject for corneoplasty the rules that govern in other equally serious operations should govern in this. If the indications were clear, and the patient was in a good condition for a cataract operation, I should not hesitate to perform corneoplasty. The subject need not be young, but if aged, should have a fair constitution uninjured by alcoholism or debauchery. His general condition should be looked after;

the eyelids should be carefully examined for patches of inflammation, and for misdirected cilia. The lachrymal canal should be irrigated with a good antiseptic solution daily for about four days before the operation; and a similar solution should frequently be applied to all parts of the conjunctival cul de sac.

The patient's cornea should be measured with a small compass, and an animal, preferably a dog, found, whose cornea measures two or three mm. more in diameter than that of the patient.

His eyes should be put through a preparation similar to that of the patient, and his acquaintance should be kindly but zealously cultivated. At the proper time he should be firmly strapped to a table close to that occupied by the patient.

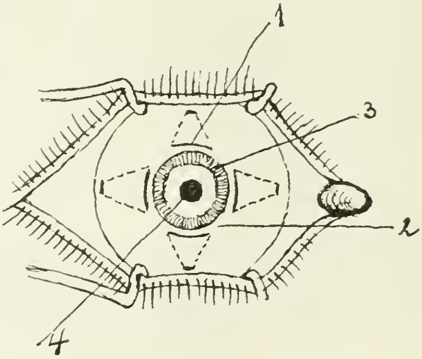


FIG. 1.—Showing eye of patient prepared for the graft. 1. The cut through the limbus. 2. Space to be freshened, 3. Oblique cut through cornea and sclera. 4. Pupil, iris not shown.

The patient should be placed on his back with his face on a dead level, and after the speculum is introduced, a small soft sponge, cupped to fit the curvature of the eye, should be saturated with an eight per cent. solution of cocaine mur. and layed on the eye, care being taken that it does not flow into the lachrymal canal.

The surgeon should pick up with fixation forceps a fold of conjunctiva over and a little in advance of the insertion of the superior rectus, and with a knife begin an incision three mm. to the right of a vertical line through the center of the pupil, and one mm. behind the apparent sclero-corneal junction with the side of the knife flat against the cornea, and its edge toward the left.

Pass the knife back through the limbus toward the center of of the tendon of the superior rectus at a point about eight mm. from the cornea. When the point of the knife has passed through the limbus, and into the sclero-conjunctival space, it must be carried to the left making an incision six mm. long, all points of which must not be further than one mm. from the visible cornea. The edge of this incision must not be haggled, nor must the opening made be stretched very much as it is necessary to retain the full elastic power of this band in order that it may hold the graft more firmly in position. The incision is the base of a triangular opening, the apex of which should be eight mm behind over the center of the tendon of the superior rectus. The apex should now be snipped across the tendon with the scissors, and a probe or small hook passed from base to apex to see if there be any uncut subconjunctival tissue. If any be found it must be freely divided. The narrow strip lying between the incision and the cornea must now be thoroughly freshened by cutting or scraping off the conjunctival covering.

This process must be repeated in every detail over each of the three other recti muscle tendons. While the surgeon is making the fourth and last subconjunctival opening, an assistant should chloroform the animal to which the surgeon next turns his attention.

With forceps he picks up the conjunctiva over the center of the tendon of the superior rectus eight mm. posterior to the cornea and with knife or scissors he cuts the apex and sides of a triangular flap the base of which is to be seven or eight mm. at the limbus which must be left intact.

After this he proceeds in like manner to make an exactly similar flap over the remaining three recti tendons.

The animal is now left in the hands of the assistant who has been instructed to pass a half-curved needle containing split silk through the apex of the flap, tying the two ends of the silk together, leaving the knot near the needle's eye.

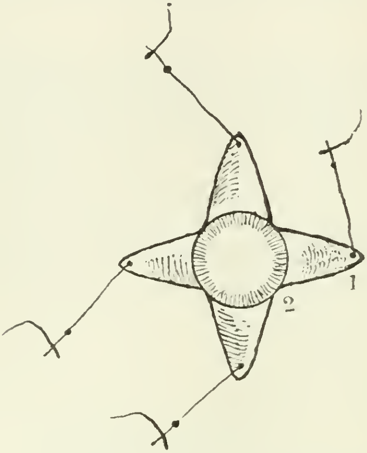


FIG. 2.—Showing the graft after removal. 1. Conjunctival flap. 2. Oblique cut through the cornea and sclera.

The surgeon now begins the most difficult part of his work, the removal of the patient's cornea, which requires a stout heart and a steady hand.

The cornea is usually found to be so densely opake that it is not safe to pass a knife through the anterior chamber, which would have to be done blindly. He must therefore fix the cornea with a sharp hook or ophthalmostat, and with the edge of the knife begin his incision at the sclero-corneal junction, passing it as obliquely through the cornea as possible. (See Figs. 1 and 3).

If he could leave all of the inner flap of the cornea except that which would cover a semi-dilated pupil it would be all the better. But in any case he should cut through the crown of corneal vessels that are near the limbus, or he will increase the danger of interrupted nutrition, and consequent late opacity of the graft.

A careful effort should be made to cut one-half through the cornea all around before the anterior chamber is opened at any point.

If this is accomplished the hook or ophthalmostat had better be substituted by delicate forceps with which the cut edge may be grasped and the cornea depressed in the center which will greatly facilitate splitting it towards the center.

But if one fails to save as much of the inner surface of the old cornea as we have indicated, ordinary care will enable one to make the incision so obliquely through the vascular corona as to obtain a cut surface three times the breadth of the thickness of the cornea. This not only gives a good surface for union, but also divides the vessels and inter-stromal spaces on different planes. The histology of the cornea indicates the importance of this statement. For between the individual bundles of the cornea, and also between the lamellæ formed from the bundles, open spaces exist, which are filled with lymph and are called lymph-spaces. These are connected with each other by numerous minute lymph-canals, constituting a continuous system of lymph-passages that permeate the entire cornea. This system is designed for the circulation of the lymph, upon which the health and life of the cornea depends. Therefore in order that these vessels be given opportunity to heal on different planes the cut should be made through the cornea as obliquely as possible. But with the greatest care we frequently fail to obtain a cut surface more than two mm. in breadth at the narrowest point.

The surgeon having removed the old cornea, now turns his attention to the removal of the graft, the prepared flaps of which the assistant has threaded as instructed.

The assistant holds the four needles together out of the surgeon's way while he grasps with smooth forceps one of the flaps near the limbus, and with a knife cuts down close to the sclera, and through that portion of it that over-laps the inner corneal border, as obliquely as possible into the anterior chamber.

It is not necessary in this case to cut all around the cornea before entering the anterior chamber, except he should choose to do so, as we intend the animal shall lose his eye in any case. Hence the surgeon should give all his attention to the obtainment of a proper obliquity and smoothness of the graft. When this incision is properly completed, he has but to repeat the same process at each of the other three flaps, and with any uncut tissue between them, when the graft is removed and held by the four threads.

It should be dipped into a warm solution of boroglyceride, or other antiseptic, and gently layed on the wound exactly as it is intended to remain. There must be no turning or twisting, neither removing and replacing of the graft. It must be placed exactly right the first time.

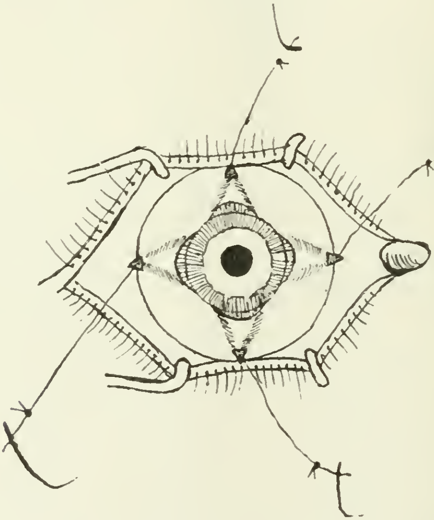


FIG. 3.—Showing the eye after the application of the graft.

Now a needle is to be passed through a subconjunctival wound from base to apex and the flap drawn gently after it while counter-traction is made with a sharp hook hooked into the sclera at the edge of the wound.

The opposite flap is next treated in the same way, and afterwards the two remaining flaps. They are all now to be drawn taut, which will give the cornea a conical appearance since the grafted cornea must be two or three mm. greater in diameter than the one removed.

The tip of each of the flaps will extend through the small openings in the conjunctiva, and if the graft fits nicely all around, may be snipped off some distance from the opening, which will liberate the threads also.

If there should be a tendency in the flaps to contract beneath the conjunctiva, or if the edges of the wound tend to separate or bulge up between the base of the flaps, a different course should be taken.

One of the double threads should be cut between the needle and the knot; one tine of the forceps passed beneath the rectus tendon, the other over the flap, and a short stitch taken through both the flap and the tendon. But this, if done with one flap, must be done with all so that traction caused by later contraction be equally distributed.

When all is completed the eye is, of course, to be dressed antiseptically, and the patient not allowed to stir for four or five days except by the aid of nurses. His bowels must be kept inactive, and he is to have no food that requires chewing.

Solution of atropia sulphate should be instilled between the lids sufficiently to keep the pupil dilated for at least two reasons: First, it is a preventive of ciliary congestion; and secondly, the iris being held near its scleral margin is thickened and therefore helps to hold the inner margin of the wound in coaptation until union takes place.

The assistant should enucleate the animal's eye, who should receive gentle care and treatment until he shall have recovered.

After yielding an eye for the benefit of man he should receive of man humanitarian treatment.

It remains for us to briefly enumerate the advantages of this operation, and we shall conclude:

1. It admits of our using as large a graft as we think necessary, yet the elastic openings in the limbus, if properly made, will hold it in good position.

2. The elastic band also gives us circular and uniform union without any bulging at points intervening between the flaps because of the largeness of the graft.

3. It furnishes the largest surface possible for union, offering the best opportunity for healing in a manner to allow the greatest freedom for the passage of nutritive elements through the lymph-channels of the cornea itself.

4. Large additional channels of nutrition are afforded, without the intervention of any corneal scar, through the large conjunctival flaps.

5. The cicatrix is placed obliquely through the most vascular area in the border of the cornea, and therefore in the most favorable position.

If we suppose that one-half of the aggregate caliber of all the corneal lymph-channels be obliterated by cicatricial contraction, we should still have sufficient sources of nutritive supply to maintain the life of the graft continuously

The greatest objection to this operation is the extreme difficulty of performing it without a rupture of the suspensory ligament of the lens, or such friction on the capsule as might be followed by cataract.

But a good eye, brave heart and a steady hand, can accomplish it.

Besides it should never be undertaken except in cases where there are no other alternatives than this operation or blindness.

PRESBYTERIAN EYE, EAR, AND THROAT CHARITY HOSPITAL OF BALTIMORE.

ANALYSIS OF THE SIXTEENTH YEAR'S ANNUAL REPORT.

BY JULIAN J. CHISOLM M.D., LL.D.

The Free Dispensary work for the year 1893 has been large. Ten thousand nine hundred and forty-one persons have been treated, with an aggregate attendance of 31,655. In analysing the work I find much of interest and worthy of note.

One thousand two hundred and sixty affections of the eyelids were treated. While squeezing out the lymph masses is found an excellent practice in trachomatous cases, the Jequirity bean has not been discarded. In pannus I find it more efficacious than any other treatment. My mode of application is to place a little of the jequirity powder on the conjunctival surface. In the course of a few hours all the peculiar phenomena belonging to the local irritation of the drug appear, and are usually accompanied by so much pain as to require morphine internally for their relief. In 24 hours the lids are œdematous, and the conjunctiva and cornea are more of less covered with the characteristic greenish yellow exudate. This specific inflammation is of short duration. In three or four days convalescence starts, and steadily continues, until a very marked improvement shows itself in the vision. The accidents which have occurred in the experience of other practitioners, I have not met with, and hence I apply the powder with confidence, expecting permanent good results from it.

In the treatment of tarsal tumors the practice of the dispensary is to open them from the inner side of the lid, and by means of a sharp steel curette scrape off the epithelial lining of the sac. Blood takes the place of the gland secretion, which makes the tumor as large when the operation is finished as it was before the sac was opened. The blood swelling however undergoes rapid absorption. If the inner surface of the sac has been properly scraped, within ten days the tumor disappears, leaving no trace of its former presence.

In affections of the eye muscles, 310 cases, there has been no peculiar method of treatment followed, except the regular routine one of completely dividing the muscle when an operation was deemed necessary.

Affections of the conjunctiva, 2,454 cases. Although nitrate of silver solutions are found essential for the successful treatment of purulent ophthalmia, and for severe cases of catarrhal inflammation, the solution is never given to patients, to be used by them at their own homes. The strength of the solution is 1%. It is never used more frequently than once in the twenty-four hours, and is always applied by some member of the surgical staff, so that the effects of the previous drop can be seen, at the daily visit, before it is applied again. Under this cauterizing treatment, followed by the thorough cleansing of the eyes every hour in the 24 by a solution of borax, gr. x to the ounce, or a bichlor. hydrarg. solution, 1 to 4,000, I have never lost an eye from ophthalmia neonatorum, which was brought to the dispensary before the cornea had become implicated. In dispensing astringents for conjunctival affections, it is found very convenient to color the solutions. The borax eye drop is made pink by adding a drop of cochineal; the sulphate of zinc solution is made green by the addition of a drop of fluorescin, while the bichlor. of mercury is left colorless. These collyria, in such constant use in the daily working of the dispensary, are known by the patients as pink, green or white drops. It enables the Staff to learn from the statements of the patient what local application has been used.

For corneal ulcers the galvano-cautery is found most efficient in stopping sloughing tendencies, and in promoting cicatrization. The use of the Japanese Hot Box in corneal ulcers, is one of the greatest comforts the hospital patients enjoy. It is a small tight box made of tin or copper, and about the size of the hand in length, breadth and thickness. In this box a lighted fuse of compressed carbon is placed. A slow combustion goes on for two or three hours, sustaining a steady temperature of about 115 degrees Fahrenheit. When in use, the warm box is enveloped in a handkerchief, folded cravat fashion, and is tied over the painful eye, with a layer of cotton wadding intervening. In hospital language this box is called the "pain killer," because it soothes a painful eye in a marvelous manner, which only the continuous application of heat will do. The Hot Box is constantly in use for all painful eyes whether from corneal, scleral, or iritic inflammations. It takes the place of large doses of opium for the relief of glaucomatous suffering. In hundreds of cases, during the past five years, the Hot Box has proved itself the most convenient appliance in the hospital. In Japan, where they are all made, and by the hundred of thousands, they are found in every household. It was on account of their efficiency as a domestic remedy in relieving abdominal, thoracic, or limb pains in that country that I was induced to use them for the eye and ear. I find them invaluable. They with the carbon fuses can be purchased wherever Japanese wares are sold.

Of lens troubles, 498 were entered on the hospital books for 1893, which makes 5,615 cataract patients seen in the Dispensary since the opening of the hospital 16 years ago: the surgical staff has therefore had a very large experience in the treatment of cataracts. During the past year there were 178 operations. Of these 123 were cataract extractions; 36 with iridectomy and 87 without. During the previous year there were only 27 extractions with iridectomy and 92 without. For the year 1894 extractions with iridectomy will be more numerous, showing a growing tendency in my belief that there is more safety with an iridectomy. Notwithstanding every care in the after-treatment of simple extractions, a certain percentage of iritic hernias will occur. This is the experience of every operator, whether in Europe or America, regardless of the after-treatment which he may adopt. Last year, after 70 simple extractions which I myself made, there were 5 cases of prolapse of iris, or 7% of such accidents. When it is remembered, that for the last 5 years I have only closed the eye operated upon, and leave my patients to move about their room or lie in bed as they prefer, these results compare most favorably with the percentage of accidents in the clinics of the most skillful European ophthalmic surgeons, most of whom practice the most rigid restraints on the bodies of their cataract patients, keeping them in dark rooms, in bed, on their backs, and with both eyes tied up. When. such hernias occur I remove the protrusion of iris early. Whilst I have not lost a single eye from this hernia complication, convalescence is certainly retarded, and hence I consider such an accident very undesirable. I confess that I do not know to what to attribute this accident, and therefore I do not know how to prevent it. In illustration, I will give extracts from the history of two gentlemen who were recently operated upon for cataract without iridectomy. Both were smooth extractions, leaving clean central pupils. Only one eye in each case was involved in the blindness. Under my method of dressing, only the eye operated upon was closed, so that each had an eye left uncovered for use. They were healthy men, between 60 and 70 years of age. They were operatad upon within a few minutes of each other and occupied contiguous rooms in the hospital. One gentleman was of the lethargic type. He went to sleep soon after the operation, and had an uninterrupted nap of several hours. He seemed to have a special gift for sleeping at any and at all times. The other had a severe attack of irritability of the neck of the bladder which came on during the evening of the day of operation. For many hours it kept him passing urine every few minutes, accompanied by intense pain and severe straining. When I visited the hospital the next day I found him still suffering, notwithstanding doses of morphia which my resident physician had administered. I ordered at once a large dose of chloral hydrate, which soon brought relief from pain and with it sleep. The patient who had spent the first night after cataract extraction in walking the floor, and straining every few minutes to urinate, left the hospital with a perfect, free, central pupil. The other, who led the most passive of lives, had a large iritic hernia which I had to remove. When I do a small iridectomy I have no anxiety for the patient, and I expect a rapid convalescence with a perfect result.

In lost and painful eyes condemned for removal I still perform optico-ciliary neurotomy in preference to enucleation, if the eye is good looking enough to be retained. I have never seen harm come from this course, but on the contrary have been able to retain a painless eye to the decided comfort of many patients. The only trouble that I have found from the ciliary neurotomy is that in some cases the eye pains return, and then the more radical removal of the painful eyeball had to be done. The attempt at saving the eyeball does not make the final removal more dangerous nor more difficult. In treating this class of cases at the Hospital I find 86 optico-ciliary neurotomies standing against 544 enucleations. Evisceration of the contents of the lost eyeball I have abandoned on account of the greater pain and swelling and much more tedious convalescence which follows the operation.

Refraction cases are very carefully worked out at the dispensary. Last year out of 2140 patients needing spectacles, 1057 were astigmatic, who suffered pains in head and eyes when at work. Of the very great value of weak cylinders, .25D., in permanently relieving pain I constantly have proofs. Astigmatism is the common deviation from the emmetropic eye, and its presence among enlightened nations seems rather the rule than the exception. Whilst this fault in corneal construction is so frequently met with, it does not always annoy. It is only when such eyes are called upon for extraordinary or long continued exertion that these small defects cause trouble. Then it is that much eye-strain in continuous reading, writing or sewing, causes pain in the eyes and the head. For the relief of this there are only two remedies, viz.: Rest, abstaining from all work, which the pressing demands of the day will not permit, or removing the cause of the muscle straining by the wearing of cylinder glasses. By far the most annoying eyes under work pressure are those seemingly perfect but with a small degree of astigmatism. In the grosser defects of corneal curvature seeing is so unsatisfactory that the eyes are not kept sufficiently long at work to cause pain. In hundreds of cases I have been able to permit sewing girls and students to keep on using their eyes all day without pain by the use of a .25 D.C. spectacle. These lenses stop irregular muscle action and give comfort as long as they are steadily worn. That they can not be dispensed with in work without the return of pain is the best evidence of their usefulness. I have had to make patients discard .50D. cyls. and wear .25, the overcorrection causing as much discomfort as when no correction was made.

THE ACTION OF THE HYDROCHLORATE OF SCOPOLAMINE ON THE EYE.[1]

BY THOMAS R. POOLEY, M.D.,

Permanent Member of the Medical Society of the State of New York; Surgeon-in-Chief of the New Amsterdam Eye and Ear Hospital; Professor of Ophthalmology in the New York Polyclinic.

It is the purpose of this paper to briefly summarize some of the observations already published in relation to this drug, and then to give the writer's experience with the same for the past six months.

In the *Klinische Monatsblätter für Augenheilkunde* for 1893, Raehlmann has a paper in which he says that Schmidt, of Marburg, first described this drug as an atropoid alkaloid derived from the roots of the *scopolia atropoides*, and which, like atropine, hyoscine, etc., belongs to the pharmacological group of the tropëines, and as such the instillation of a watery solution in the eye causes dilatation of the pupil. According to Ladenburg, scopolamine as well as hyoscine are contained in hyoscyamus without being identical with the latter. It is rather isomeric with cocaine, but yields quite different integral products.

The preparation was given to Raehlmann by Professor Kobert with the information that after experiments on the lower animals by the internal administration of scopolamine, it showed an opposite effect to atropine, and that its influence on the cortex of the brain was not stimulating like that of atropine, but on the contrary retarded its action. (Later on I shall have some comments to make on the erroneous character of these observations). These last named qualities led to the expectation *a priori* that the local special effects of the new remedy would be different, especially on the conjunctival blood vessels. Raehlmann, after using scopolamine both on normal and diseased eyes, came to the conclusion that as a mydriatic and antiphlogistic it surpasses all other tropëines, including atropine. In strength of mydriatic effect it resembles hyoscine closely. The remedy does not produce the disagreeable after-effects and double vision which, according to his observations, occur in the use of hyoscine; but it possesses all the advantages which belong to hyoscine in comparison with atropine. He used it during a period of six months in all cases in which atropine is applicable, and also by way of comparison with atropine, and he has found that scopolamine is, in many cases at least, equal to atropine, while in others it is entirely its superior; but the circumstance, says he, which will insure scopolamine an enduring place among ophthalmic remedies is that it can be used for a longer time in a solution equivalent to a one per cent. solution of atropine without producing the troublesome associated symptoms which so often make the continued use of atropine impossible. He further says—but this I do not believe—it is well known that atropine when used as an instillation for any length of time disturbs the appetite. He has never seen this or similar effects from the use of scopolamine. It is only after very large doses of scopolamine that a feeling of dryness of the throat is produced, a symptom which occurs after a very moderate dose of atropine. The state of nervous restlessness, with or without reddening of the face, and quick pulse, which is so often found in patients treated with atropine, never occurred after the use of scopolamine. In cases of incipient atropine poisoning, or in an idiosyncrasy toward atropine, scopolamine renders therefore the best service since it more than supplants atropine in its local effect, and comparatively destroys its general effect.

---

[1] Read before the New York State Medical Society, February 7, 1894.

In cases of iritis, episcleritis with infiltration of the sclerotic, etc., when atropine could not be any longer endured, when the powers of the body were depressed on account of want of appetite, and the general condition of the body was as unfavorable as possible, scopolamine not only improved the eye disease, but also the general health. The remedy surpasses atropine in its influence on peri-corneal injection, and possesses special advantage in suppurative keratitis, serpent ulcer, and irido-cyclitis. As is known under these circumstances, especially in suppurative keratitis, serpent ulcer and irido-cyclitis, atropine is often inadvisable. But Raehlmann has found in five cases that scopolamine caused a diminution in the size of a hypopyon. Scopolamine seems to act far more favorably on suppurating tissues than atropine, probably through its effect on the blood vessels. Scopolamine does not seem to increase intra-ocular pressure, even if there is a pathological increase of tension. If there is a pathological increase of tension the remedy can be borne, therefore it is an indispensable drug in inflammatory conditions, especially in iritis, when they occur in glaucomatous eyes. He has used scopolamine with advantage in several cases of chronic inflammation with secondary glaucoma. In one case of absolute glaucoma with great irritation, strong ciliary injection and hyphæma, the pain ceased, the eye became quiet, and the blood disappeared from the anterior chamber under the influence of this drug. He has not tried it in acute glaucoma. Hydrochlorate of scopolamine acts five times as powerfully as atropine. It paralyzes, like the latter, and in the same degree, the sphincter of the iris, and the accommodation. The duration of the effect is one-fifth per cent. scopolamine compared with one per eent. atropine. (Whether homatropine or sulphate it is not stated). The duration of the effect is about the same—perhaps somewhat shorter with scopolamine than with atropine. It is to be used in solutions of one to two *pro mille* (one-tenth to one-fifth per cent.), which solutions correspond in dose to one-half and one per cent. solutions of atropine. Six to seven drops may be used daily in an adult, or it may be used every fifteen minutes during one, or one and a half hours. With children correspondingly weaker solutions are to be used. It operates best when used in divided doses.

(Report on Therapeutic Progress, *Therapeutic Gazette;* extract from the AMERICAN JOURNAL OF OPHTHALMOLOGY, July 18, 1893).

L. Bellarminow (*Russian Wratch*, No. 17, 1893)—abstract in the *Revue générale de l'ophthalmologie*, July, 1893—also has some observations on the action of scopolamine, from which he draws the following conclusions which are essentially the same as those entertained by Raehlmann: Scopolamine is indicated for the same cases as atropine, especially to determine the anomalies of refraction and accommodation, owing to its marked effect on accommodation which permits of a speedy and accurate determination; in addition, it considerably shortens the period of duration of paralysis of accommodation and mydriasis. Scopolamine is also preferable to atropine in cases of short attacks of inflammation of the cornea. In general, scopolamine has all the good effects of atropine without its bad qualities. The author therefore thinks scopolamine will soon replace atropine in the practice of ophthalmology. Merck (The Market Report for December, 1893) describes scopolamine hydrobromate as a salt of the alkaloid from *scopolia atropoides*, similar in physiological action and use to atropine, but not causing dryness of the throat, nervous restlessness or congestion of the face as in the case of atropine; neither does it affect intra-ocular pressure. Its application as a mydriatic is in one-tenth to one-fifth per cent. solution, which are equal to one-half to one per cent. atropine solutions.

It was shortly after reading these *coleur de rose* reports of the virtues of the new drug (August, 1893), that I began its occasional use—at first to determine whether it had any local anæsthetic properties, which I soon found it did not possess. I then began its use in all such cases in which we usually employ atropine. The preparation I first used, a one-fifth per cent. was made by Merck, and obtained from Fraser's. In all cases where instillations were used by myself, or my assistant, Dr. W. J. Killen, this preparation was employed, but when it was prescribed the patients got it at Weiss' drug store, Thirty-

Fourth Street and Seventh Avenue, which was also stated to have been Merck's preparation.

As a mydriatic to determine the anomalies of refraction, my house surgeon has used it in a number of cases which I will not weary the Society by reporting in detail, but I will briefly give the results. In some instances the instillations were made while the patient was in the hospital—four times within an hour, or at intervals of fifteen minutes—and then the examination was proceeded with. In every instance it was found that the effect had been to produce complete paralysis of accommodation, and that mydriasis was produced in from ten to fifteen minutes, but that it took about three to four instillations to complete the paralysis of accommodation. The completeness of the paralysis of accommodation was shown both by the inability to see in the near, and by the bringing out in the second examination the total amount of ametropia. The duration of the mydriasis and the paralysis of accommodation was from twenty-four to forty eight hours—about the same as homatropine, but much shorter than that of sulphate of atropine. One remarkable result observed by Dr. Killen in several cases was a notable diminution in the visual acuteness after the full effect of the drug on accommodation—*i. e.*, the correction of the ametropia did not bring the vision to the normal standard.

In three cases, all of them occurring in patients who had bought the drug themselves and used it at home, very marked toxic effects occurred. One of them is so remarkable that I shall take the liberty to report it in full. It happened in a girl of about thirteen years, in whom there was a history of convalescence from nephritis following an attack of diphtheria and cardiac palpitation. These facts, however, did not come to light until after the drug had been used. On January 29, 1894, she came to the clinic having used the solution of scopolamine (one-fifth per cent.) six times in each eye, when the most alarming symptoms set in—the child began to stagger, talk in a thick, drunken and foolish way, and at times seemed out of her head, and was very dizzy. At the clinic, the pupils were found to be widely dilated, there was constant working of the lips and muscles of the face; the pulse was very rapid—120 to 130 per minute—and the heart's action very irregular and rapid. She had a staggering gait which did not allow her to walk without assistance. She complained of needles under her feet on standing; she said there was no dryness of the throat, but there was no erythema of the face. She was kept in the hospital for three hours before she was able to go home. She was given half an ounce of brandy two or three times. Two days later the mother brought her back to have the examination of the eyes completed. She said that all that night the girl raved and was out of her head, and it was only two days after the use of the drug that she seemed to have fully recovered. Two other cases came under my notice only a day or two later, both occurring in healthy adult females in whom the symptoms were the same, but less in degree. In addition both of these complained of dryness of the fauces. Here too the toxic symptoms did not pass off before twenty-four hours in one case, and in the other, forty-eight hours. In all of these cases as the drug was given to be used at home, and a larger quantity prescribed than was needed, more than one drop may have been used, and it may even have run over the face into the mouth. At all events it seems significant that the symptoms occurred only when the drug was used by the patients themselves. The number of instillations too were more than were used at the clinic.

The other cases in which I have used this drug have been mostly in ulcers of the cornea of different types. In one case of serpent ulcer, just the kind in which it is said to be so efficacious, it was noted that scopolamine was used for two days, but the eye was so irritated by it that atropine had to be substituted. In all other affections of the cornea in which it was used, there was a very beneficial effect noted, especially so in one case of suppurative keratitis of traumatic origin in which the healing occurred in a few days. In quite a number of cases of phlyctenular keratitis too it acted very promptly. In one case of kerato-iritis the mydriatic effect of the drug was very quick, marked and satisfactory. I have not yet tried it in cases of iritis of severe type, or in any case in which there was a tendency to increase in intra-ocular tension, and consequently cannot confirm or deny the very important observation made by the authors quoted, that it does not increase intra-ocular tension. If this shall be confirmed, however, by future experience and observation, we shall have a drug of inestimable value in ocular therapeutics. I am anxious too to try it in cases in which atropine produces the severe form of conjunctivitis which we call "atropine poisoning," for, from the positive statements made we may hope that it will not only supersede atropine in these cases, but will also have a favorable effect on its course when it has already occurred.

My conclusions, then, from my brief trial of scopolamine are: That it is of value as a mydriatic and cycloplegic in the examination of anomalies of refraction; that its action is more complete than homatropine and of about the same duration, and better than sulphate of atropine because its effects pass off sooner; that it is open to the objection, if my observation should be confirmed by wider experience, that it produces toxic effects oftener than homatropine in spite of statements to the contrary; that the temporary amblyopia sometimes induced does not seem to be of much moment; that in cases of short attacks of inflammation of the cornea, especially in some of the suppurative type, it is of special value.

The tendency of the profession to vaunt the therapeutic value of a new drug is well known, and many instances in which those who were loudest in their praises of it soon become equally pronounced in their condemnation, must occur to all of us. That scopolamine, as we have quoted from one of the authors, will soon replace atropine in the practice of ophthalmology is not so well assured, but that it may prove a very valuable addition to the list of mydriatics which we now have, seems to be altogether likely, and we await with interest further details of experience and observation from our colleagues.

NEWS.

A BILL FOR THE PREVENTION OF BLINDNESS IN THE STATE OF OHIO.

The following bill became a law in the State of Ohio, having passed both houses unanimously, March 13, 1894:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That should one or both eyes of an infant become inflamed or swollen, or show any unnatural discharge at any time within ten (10) days after its birth, it shall be the duty of the midwife, nurse, or relative having charge of such infant to report in writing within six (6) hours to the physician in attendance upon the family, or in the absence of an attending physician, to the health officer of the city, village or township in which the infant is living at the time, or in case there is no such officer, to some practitioner of medicine legally qualified to practice in the State of Ohio, the fact that such inflammation, swelling or unnatural discharge exists.

SECTION 2. Any failure to comply with the provisions of this act shall be punished by a fine not less that ten dollars ($10.00) nor more than one hundred dollars ($100.00), or imprisonment for not less than thirty (30) days, nor more than six (6) months, or both fine and imprisonment.

SECTION 3. This act shall take effect and be in force from and after its passage.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. APRIL, 1894. No. 4.

ORIGINAL ARTICLES.

A CONGENITAL IRIS BAND ACROSS THE PUPILLARY SPACE.

BY T. MURRELL, M.D., ST. LOUIS, MO.

Anomalies of the pupil are comparatively rare. We find displacement—corectopia—occasionally, and rarely also several openings in the iris—polycoria. Again we find remains of the pupillary membrane in the form of very slender, clear-cut filaments, one, or two, or many, crossing the pupillary area in parallel or stellate bands.

These shreds of the fœtal membrane that have been left are usually so fine and colorless as to be seen with difficulty and are liable to be overlooked.

In polycoria the bands of intervening iris tissue are usually of considerable width and partake of all the structural characteristics of the iris.

The supernumerary pupils have no sphincter, however, thus proving that instead of a redundancy of pupils by excess of design, Nature has erred in deficient development of the iris and the supernumerary pupils are merely dehisci, or clefts, for want of material to fill up the gaps.

The following case is of interest because of its lack of resemblance to any of the anomalies above described.

A married lady, aged 23 years, consulted me for asthenopia. V.$={}^{15}/_{xv}$ O. N. Hm=1.50 D. Under homatropine Ht=1.50 D. This was certainly unusual, especially as she had fairly good accommodation before using the mydriatic. On carefully inspecting her right pupil I discovered a slender pigmented band, the same color as her irides, which are brown, crossing the pupil horizontally just below the center of the pupil. It could be seen with difficulty without a magnifying lens. Under a strong lens it was seen to be evenly pigmented, just like the iris, in all its extent. It was attached to the margin of the pupil, dividing into three separate bands on the nasal side and into two on the temporal just before reaching the margin of the pupil. The picture given on page 269 of Alt's recent Treatise on Ophthalmology, would do very well for it if turned horizontally instead of vertically. When the pupil was widely dilated, which was round and even, this band was drawn out quite slender, but when the pupil was its normal size its diameter was markedly increased.

From its close resemblance in manner of attachment to the iris near the sphincter border it resembled the remains of the fœtal membrane, but in other respects it bore all the appearance of iris tissue.

Never having seen any case similar, and never having read report of such an one I thought it worth while putting on record.

TRANSLATIONS.

SYMPATHETIC OPTIC NEURITIS OF INFECTIOUS ORIGIN. RECOVERY. PARALYSIS OF ARM. JACKSONIAN EPILEPSY. TREPHINING. RECOVERY.

BY GILLET DE GRANDMONT.

At the meeting of the *Societe d' opthalmologie* of Paris, Dec. 5, 1893, the author presented the little patient who has recently been the subject of a communication to the Academy of Medicine by Mr. Péan. He particularly dwelled upon the ophthalmological side of this very interesting observation, of which we give here an extract.

A child, 4 years of age, was struck on July 14, of last year by a revolver bullet, which traversed the right eye and penetrated into the deeper parts. This was followed by meningitic symptoms, as fever, restlessness and headache.

After August 4, furthermore, a gradual diminution in visual acuity was noticed in the other, the left eye.

The child entered Mr. Gillet de Grandmont's clinic who found in this left eye absolute blindness, the pupil ad maximum dilated, immoveable, no sensitiveness to light. The optic papilla was grayish-white, swollen, and blurred. There were, however, no hæmorrhages in the fundus of the eye. The diagnosis was: optic neuritis due to infection.

The treatment consisted of subconjunctival injections of corrosive sublimate.

After a few days the little girl could recognize persons, but had no peripheral vision. On September 20, she counted fingers at one metre.

The final developments in the case permitted of a direct inspection of the purulent focus, which had caused this neurits. As it was, the child was again taken with headaches after September 21; then a left-sided facial paresis appeared, followed by an absolute monoplegia of the left arm and a slight paresis of the left leg. Her vision retained the degree above mentioned. September 24 and 25, she had attacks of Jacksonian epilepsy.

Dr. Ballet who was called in consultation, diagnosticated a lesion involving the arm center, that is a lesion of the middle portion of the frontal and ascending parietal convolutions. It was concluded that trephining was necessary. The operation was done by Mr.Péan, according to the indications laid down by Lucas Championnière.

The skull having been denuded, the periosteum having detached and the bone being resected, the dura mater was incised. The pia mater appeared the color of red wine and was covered with white arborescent deposits. About 200 grammes of cerebral fluid escaped, which looked milky, opalescent and evidently purulent. The surface of the brain was washed with warm sterilized water, and thus the yellowish false membranes which lined the focus were removed. The cerebral convolutions sank back and appeared depressed. Sutures and bandage.

The next morning the child was lively, had no headache and made slight movements with the left arm. On October 10, she was perfectly cured.

On December 6, the general condition of the child was excellent and she counted fingers at 5 metres. The injured right eye is shrunken.—*Archives d' Ophtalmologie.*

CONTRIBUTION TO THE STUDY OF PRIMARY EPITHELIOMA OF THE MEIBOMIAN GLANDS.

BY GILBERT SOURDILLE.

[From the Laboratory of Prof. Panas.]

Having reviewed the previous literature on the subject. The author relates the following case.

A stone-cutter, 59 years of age, came to the Hotel Dieu on April 10, on account of a small tumor of the right upper lid. For about three weeks he had momentary shooting pains in this lid and the small tumor developed. When examined, the tumor was hardly as large as a pea and situated on the outer third of the right upper lid. The skin showed no alteration, its color, thickness and consistency were normal; it was easily moveable and nowhere attached to the tumor. The ciliary margin was also normal and separated from it by a band of tissue of about 2 mm. The tumor appeared to be embedded wholy in the tarsal tissue, and felt hard, almost cartilagenous, its outlines were sharply defined. When the lid was turned the tumor somewhat protruded through the conjunctiva, which was perforated. Through this opening a grayish button protruded which did not adhere to the conjunctiva but, was attached to the tumor.

The rapid and painful development, the cartilagenous hardness of the tumor, the early perforation of the conjunctiva and the grayish nodules, might have opened our eyes and made us hesitate in making a diagnosis. But, in the absence of all scientific data about epithelioma of the Meibomian glands, our attention was in no way led to assume the possibility of such a new formation, and in spite of the unusual signs we took the tumor to be an ulcerated chalazion and it was treated by curetting it through the opening in the conjunctiva.

When doing this, the sensation of a hard, infiltrated and cartilagenous wall was perceived, and the firmly resistant whitish-yellow mass had little in common with the soft, semifluid, grayish-red appearance of a chalazion. Twelve days later, when the patient returned for the first time, we saw our error.

The patient's condition was now considerably aggravated; since the operation he had a dull, continuous pain in the eyelid. The tumor was three times the former size and was as large as a hazel-nut; its outlines were no longer sharply defined. The skin and ciliary margin were not ulcerated, but they were thickened, and hard, and adherent to the underlying tumor. The conjunctiva showed a deep excavation with a hard base, which is thickly infiltrated and covered with grayish nodules, bleeding at the least touch, and walls of the same nature. Towards the orbital margin the tumor could easily be isolated, at the ciliary margin this could not be done. There was also a considerable swelling of the pre-auricular glands.

These symptoms, this progress, this rapid invasion of the lid and the glands, made us change our first diagnosis at once and think of epithelioma. The patient now, April 22, entered the hospital to be operated on.

During the few days which elapsed before the operation, the tumor continued to grow rapidly in size; every evening the patient suffered from severe pain in the lid, so that it became necessary to give him antipyrine. At this time an ulceration of the cornea and conjunctiva was seen to develop at the outer part of the horizontal meridian. This ulceration was superficial and could be due either to the rubbing or to an infection by the tumor. Moreover, opposite to a nodule which continually touched it, there appeared a little swelling of the size of a grain of wheat at the site of a Meibomian gland in the lower lid, which looked yellowish, was hard and elevated the conjunctiva to some extent.

On May 8, the operation was performed. After the removal of the external half of the upper lid, the excision of the small tumor of the lower lid, and the curretting of the corneo-conjunctival ulcer, Mr. Panas repaired the lid by autoplasty according to the French method. The result was excellent.

When the patient was seen, eight months later, he was completely cured.

The histological examination, especially of the little tumor on the lower lid, proved the case to be one of primary epithelioma of the Meibomian glands.

AMERICAN MEDICAL PUBLISHERS' ASSOCIATION.

The annual meeting of this Association will be held at White Sulphur Springs, West Va., Friday and Saturday, August 3 and 4, 1894. The annual dinner will be given in the evening of the first day. A number of practical papers are being prepared, bearing upon subjects of interest to every one engaged in medical publishing. The above dates have been selected as a time when most business men can best spare a few days for a pleasure trip, and reduced rates having been secured at the hotels for members and their families, it is hoped that this meeting will be one of congeniality as well as of business interest. A special meeting has been called for June 4, at San Francisco, in the Palace Hotel, at 1 P.M. sharp, for the transaction of special business. It is hoped that all publishers attending the A. M. A will make it a point to be present at this meeting.

Western and Southern members should write to E. B. Pope, C. & O. R'y, St. Louis, and arrange to advertise for transportation to White Sulphur Springs.

CORRESPONDENCE.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—The thirtieth annual meeting of the American Ophthalmological Society will be held this year on Wednesday and Thursday, May 30 and 31, at the Arlington House, Washington, D. C., in connection with the third triennial session of the Congress of American Physicians and Surgeons.

Titles of the following papers to be read at the meeting have been received, and will take precedence on the bulletin so far as practicable.

Dr. H. Knapp—Two recent magnet operations; one an ideal success, the other a total failure.

Dr. Wm. P. Norris—A demonstration of some Photo-micrographs of the human Retina.

Dr. Edward Jackson—The practical value of the Ophthalmometer.

Dr. D. DeBeck—Family history of Irideremia and Coloboma Iridis; Cataract operation on two members.

Dr. C. A. Oliver—1. A clinical and microscopical study of two cases of Glaucoma associated with intra-ocular hemorrhages. 2. Some additional studies upon the clinical value of repeated careful correction of manifest refractive error in Plastic Iritis.

Dr. Swan M. Burnett—Tumor of the Optic Nerve.

Dr. C. S. Bull—1. Degeneration in the Retinal vessels with hemorrhages in the Retina and Vitreous in Gouty patients; 2. Recent experiences in the treatment of detachment of the Retina.

Dr. Edward Friedenberg—Pseudo-Erysipelas Periocularis Medicamentosum.

Dr. S. Theobald—1. Some typical examples of subnormal accommodative power. 2. The ophthalmoscope does not always reveal latent hypermetropia, with notes of a case. 3. A case of ophthalmitis suppurativa following discission of capsular opacity.

Dr. E. E. Holt—Removal of steel from the Vitreous.

Dr. G. E. Schweinitz—1. Colloid disease in the macular region analogous in appearance to the so-called "Drusen" in the nerve head. 2. Epithelioma of the lid, excision and transplantation of skin without a pedicle. 3. Concerning monocular diplopia, with cases.

Dr. F. M. Wilson—1. Two cases of sympathetic inflammation. 2. A portable Perimeter, with its apology for existence.

Dr. G. W. Hale—So-called muscular asthenopia.

Dr. J. A. White—The practical value of low grade cylinders. (This paper not positively promised).

Dr. B. A. Randall—Results of repeated examinations of the eyes of the boys in the Penn Charter School of Philadelphia.

Dr. W. B. Johnson—Foreign bodies in the orbital cavity.

Dr. A. G. Heyl—Rupture of the lymph sheath of a retinal vein.

S. B. ST. JOHN, Secretary.

SECTION ON OPHTHALMOLOGY—AMERICAN MEDICAL ASSOCIATION.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—I send you herewith a list of papers for the preliminary programme of the Section of Ophthalmology. Members of the Section who have not yet forwarded the titles of their papers will confer a favor by sending the same to the Secretary, Lewis H. Taylor, M.D., 41 S. Franklin St., Wilkes-Barre, Pa., at once.

A. R. BAKER, M.D., Chairman.

122 Euclid Ave., Cleveland, O.

PRELIMINARY PROGRAMME.

Address by Chairman of Committee.

A clinical study of the Myopic eye—Its Genesis and treatment, by Dr. S. D. Risley, Philadelphia.

Asthenopia, by Dr. C. M. Hobby, Iowa City, Iowa.

The Physiological Basis of certain Oculo-muscular Phenomena, incorrectly termed Anomalies, by Dr. F. B. Eaton, Portland, Oregon.

The value of Retinoscopy as the Crucial Test of the correction of Refraction Errors, by Dr. B. Alexander Randall, Philadelphia, Pa.

Toxic Amblyopia, by Dr. James A. Lydston, Chicago.

Amblyopia, by Dr. A. H. Voorhees, San Francisco.

Are low degree Lenses of purely Mythical value? by Dr. H. H. Starkey, Chicago.

Great value of Weak Lenses in the treatment of Eye Pains, by Dr. Julian J. Chisolm, Baltimore, Md.

Sub-conjunctival injections in the treatment of Eye Diseases, by Dr. Wm. E. Briggs, Sacramento, Cal

Fractures of the Orbit, by Dr. J. F. Fulton, St. Paul, Minn.

Cyclophoria—Its Detection and Treatment, by Dr. George H. Price, Nashville, Tenn.

Status of Skiascopy, by Dr. H. V. Würdemann, Milwaukee.

School Children's Eyes—A Plea for the Examination of every child's eyes when commencing to attend school, by Dr. W. F. Southard, San Francisco.

Some observations upon Gould's Method of managing Exophoria, by Dr. Leartus Conner, Detroit.

Conservative Treatment of injuries of the Eyeball, with cases, by Dr. Lewis H. Taylor, Wilkes-Barre, Pa.

Treatment of Purulent Ophthalmia, by Dr. C. Sevet, Cleveland, Ohio.

Retinitis Pigmentosa, by Dr. Dudley S. Reynolds, Louisville, Ky.

Iritis and its Treatment, by Dr. Louis F. Love, Philadelphia.

Report of the committee on The value of Objective Tests for the Determination of Ametropia, by Dr. Edward Jackson, Chairman, Philadelphia.

BRITISH MEDICAL ASSOCIATION.—SIXTY-SECOND ANNUAL MEETING, BRISTOL, JULY 31, AUGUST 1, 2, 3 AND 4, 1894.

SECTION G.—OPHTHALMOLOGY.—President, F. R. Cross, M.B.; Vice-Presidents, H. E. Juler, F.R.C.S., Simeon Snell, F.R.C.S.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—The meeting of this Section will be held on Wednesday, Thursday, and Friday, August 1, 2 and 3, when it is expected that many distinguished ophthalmologists will attend and take part in the proceedings.

We hope that you will be able to be present, and shall be glad if you will promise a paper, or will send any preparations, drawings, instruments, or microscopic specimens bearing on Ophthalmology, for which a special department in the Pathological Museum will be reserved.

It will greatly assist us in making the necessary arrangements if you will kindly send us an answer at an early date. We shall then be able to issue a provisional list of the papers promised, and notice of the subjects selected for discussion.

We specially invite, and shall be glad to welcome, any foreign oculists who may be able to come to us. We may remind them that the meeting at Bristol will be held in the week immediately preceding that fixed for the International Ophthalmological Congress in Edinburgh (August 7, 8, 9 and 10).

J. TATHAM THOMPSON, M.B.,
24, Windsor Place, Cardiff.
CYRIL H. WALKER, M.B.,
3, Liecester Villas, St. Paul's Road, Clifton.
Honorable Secretaries.

EXTRACT FROM REGULATIONS FOR THE CONDUCT OF ANNUAL MEETINGS OF THE BRITISH MEDICAL ASSOCIATION.

1. Papers at the Sectional meeting must not occupy more than fifteen minutes in reading, and no subsequent speech must exceed ten minutes.

2. Authors are requested to send short abstracts of their papers not later than Friday, June 29 (writen in English or accompanied with a translation), to either Secretary of the Section, so that they may be forwarded by him in time to be set up in type.

EIGHTH INTERNATIONAL OPHTHALMOLOGICAL CONGRESS, EDINBURGH.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—The date fixed for the Congress to be held here is the second week of August.

The public business of the Congress will be transacted on August 7, 8, 9 and 10, between the hours of 9 A.M., and 1 P.M.

Owing to the death of Professor Donders, who has presided on previous occasions, the Edinburgh Congress will be under the presidency of Dr. Argyll Robertson.

In response to a previous circular, about two hundred British and foreign oculists have intimated their intention of taking part in the proceedings.

If you have not done so already, kindly let me know if you wish your name to be enrolled as a member.

Members will pay £1, and will receive a copy of the Transactions.

No copies of the Transactions will be sold.

Those members who wish to attend the meetings are requested to give notice as early as possible, and also to state if they will be accompanied by any members of their family.

Reception and Entertainment Committees have been organized, which it is hoped will afford visiting members every facility in securing suitable accommodation, and of making arrangements for visiting places of interest in and around Edinburgh.

Arrangements are being made for holding a discussion on the subject of "Intraocular Therapeutics."

I shall be glad to receive, at your convenience, and in any case not later than July 1, the title of any subject on which you desire to make a communication. Rooms and microscopes will be at the disposal of members who wish to demonstrate the results of their researches in Anatomy, etc.

It is requested that any paper on an anatomical subject, or any statistical report, be communicated in abstract.

GEO. A. BERRY,
31 Drumsheugh Gardens. Gen. Sec.

SOCIETY PROCEEDINGS.

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

The San Francisco Society of Eye, Ear, Nose and Throat Surgeons held its regular meeting January 25, 1894, at the office of Drs. Powers and Hopkins, Dr. Powers in the chair. In the absence of Dr. Martin, Dr. Southard acted as Secretary. No special paper having been prepared, the first business of the evening was the presentation of cases by members.

Case I.—Chronic neuro-retinitis, by Dr. Geo. H. Powers. The patient was a young woman from 18 to 20 years of age. She had been seen by the doctor but once or twice, who had but a meagre history of the case. She has had poor eyesight since childhood During the past year vision has deteriorated very rapidly. Glasses have never been of assistance to her. Vision equal to counting fingers. Ophthalmoscopic examination shows swelling of the papillæ, somewhat more advanced in one eye than the other. Arteries are small, and the color of the disk would indicate that atrophy had already commenced. This seems to be a rather unusual case, when we consider the age of the patient. As to the cause we are in the dark.

Case II.—A rare case of coloboma of the iris and lens, by Dr. Kaspar Pischl. This very interesting case was shown on account of the position of the coloboma being downward and inward. With ophthalmoscope this was very distinctly seen. The common position of the coloboma is downward; those of the iris being more common than of both lens and iris. Dr. Southard mentioned a recent case of double coloboma of the iris only—downward.

CASE III.—Dr. Pischl. Case of papillitis or choked disk, right eye. It is rare to see so typical a case of this disease. The patient, a male, 30 years of age, came under the doctor's notice within the past twenty-four or forty-eight hours. He gave no history of the case. The picture of the disk and retina, as seen with the ophthalmoscope, was very characteristic of this disease. The enormously swollen papillæ; the inability to clearly make out the true boundary of the disk; the apparent increase in size of the disk, due to infiltration; the striated nerve fibers; the linear form of the many hæmorrhagic spots; the dilated veins, which were partially covered towards the center of the disk, very faithfully conformed to the cases figured by Noyes and others. The left eye showed advanced atrophy of the disk.

CASE IV.—By Dr. Powers, Chronic glaucoma. The patient a female, 45 years of age. She has had defective vision for a long time in the right eye. When first seen by the doctor he found a large glaucomatous excavation in nerve of right eye. He also found that the disease was already commencing in the left eye. Vision in right eye; perception of objects from periphery of retina; central vision nearly abolished. This case was presented to get an expression from the members as to the advisability of an operation. Personally he, Dr. Powers, had discouraged it. This likewise appeared after examination, and some discussion, to be the opinion of the members present.

There being no more cases, Dr. Powers then introduced to the Society Dr. Gustave Eisen, of the Academy of Science. Dr. Eisen has but recently returned to San Francisco from a scientific expedition to Mexico and Central America. His purpose in coming before this Society was to relate his experiences with a somewhat remarkable disease of the eyes, which he found very prevalent in that country, but of which he had never before heard. The history of this disease, its course and treatment under native methods, and by himself, and its origin, were given by Dr. Eisen in a very lucid manner and without notes. It seems to be a disease which is very prevalent along the coast from Mexico to Peru and Chili in South

America, during the hot months. He has never been able to find any references to this disease in any book on diseases of the eye. On this account he felt that a description of it might be of interest to this Society. Among the natives this disease is known by the name of "mal de ojo." The cause is a small fly, or gnat, which is very numerous and very troublesome along the whole coast from Mexico to Chili and Peru. The natives have a belief that the fly, after alighting upon the eyes, deposits a substance that causes the flesh to fall off and turn into worms. Persons of all classes and all ages may have this disease; it is mostly confined to the young of the very poor. Care is not taken to protect their faces, and being helpless and unable to ward off the insect, they suffer. More than one-half of the children are afflicted with this disease every year. The doctor has counted over twenty-five flies on the lids and conjunctiva of an infant. The disease is confined to the mucous membrane of the eyes and runs its course in from six to eight weeks, varying according to the care taken to keep the eyes clean. Eyes are rarely if ever lost. The doctor saw no blind persons while in the country. The symptoms, as observed in one of his men, were as follows: A very slight redness of the conjunctiva at upper and inner portion of the eye was first noticed; this he afterward found is the place generally first attacked. The redness quite rapidly spreads over the whole eyeball. Within a few days a muco-purulent secretion is seen to flow from between the lids. Pain develops and severe constitutional symptoms supervene. The muscles of the whole body become sore, especially of the back, arms and legs. Children become stupid, they lose their appetite; animation is wanting, and they prefer to lie down most of the time. Lids gradually become enormously swollen and everted; the mucous membrane has a dark red appearance and is very thick. At this time the patient is a very disgusting looking object. Soon particles are thrown off, which are believed by the natives to be portions of flesh. A very slight examination of the substance thrown off, in the case under observation, was sufficient to show that he had to deal with a filaria, probably an intestinal parasite of the fly or gnat, deposited by these insects when they alight upon the eyes. When fully developed the filaria are about one inch long and resemble pieces of thread. When removed they do not appear to be viable.

TREATMENT.—He could not discover that there was any particular method for treating this disease; it appears to run its course, and after a period, as he stated, of from six to eight weeks, the patient gets well, gradually the lids regain their normal appearance. As he was far from any village, and returning to town would be the abandonment of his work, he resolved to do what he could to relieve his servant. Knowing that worms did not thrive in salt water, and having heard that a solution of chloride of sodium was good for eye troubles, he applied it freely. He first filtered his solution through several thicknesses of cloth. It was then put in a wide-mouthed bottle, which the patient was instructed to hold to his eye, throw his head back, or better still, lie down, at the same time opening his eye so that the solution should freely bathe the whole mucous surface. This he was ordered to repeat several times daily. It proved so grateful to the patient that he used it every half hour. This case was cured in twenty days. The great contrast between this short term and the average of forty days was very striking and was looked upon as something wonderful by the natives. A filaria was exhibited in its normal size, also greatly magnified. It is perhaps as small as the gnats, sometimes seen on the Eastern coast.

One of the doctor's objects in bringing this subject before this body was for the purpose of obtaining information as to the best methods for treating it, as he proposes to return to Mexico this season. He intends to study the disease very carefully, and hopes to learn some new facts regarding it.

The discussion developed the fact that none of the members had ever heard of this disease. The nearest approach to it seemed to be a case of Dr. Barkan's related by him in Knapp's Archives some 18 years ago. A filaria was removed from the anterior chamber of the eye in a patient newly arrived from Australia.

It was suggested by Dr. Merritt that corrosive sublimate, 1–5000, be used; others thought 1–10,000 would be strong enough, and less irritating.

The Society gave a vote of thanks to Dr. Eisen for his most interesting and clear account of this very unusual disease of the eye.

Reports of the secretary and treasurer for the year were read.

Dr. G. Dresel and Dr. Trask were unanimously elected members of the Society, and Dr. Geo. W. Merritt was proposed for membership.

Election of officers for the year 1894 was then held, with the following results:

President—Dr. A. Barkan.

First Vice-President—Dr. M. C. O'Toole.

Second Vice-President—Dr. Elizabeth R. C. Sargent.

Secretary—Dr. Martin.

Treasurer—Dr. K. Pischl.

Executive Committee- Dr. W. E. Hopkins and Dr. W. F. Southard.

By unanimous vote of the Society Dr. Southard was requested to prepare the minutes for publication in the *Pacific Medical Journal.*

The meeting then adjourned to the third Thursday in February.

W. F. SOUTHARD, M.D.,
Secretary pro tem.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, DECEMBER 14, 1893.

D. ARGYLL ROBERTSON, M.D., F.R.S.E., President, in the Chair.

FAILURE OF CENTRAL VISION.

This paper was read by By W. A. Brailey. In an otherwise healthy man, now aged 57, and of good habits of life, the left eye began to fail in 1884, and the right followed the same course in 1886. Central vision for form and color was absolutely lost in the first eye after two years: its appreciption of form was eccentric, and was one-twelfth of the standard, and of color one-eighth of the standard. The ophthalmoscopic changes were degeneration of the retinal pigment epithelium and chorio-capillaris, leading to darkening, scattering, and irregular distribution of the pigment epithelium and atrophy of the chorio-capillaris, so that the thickened vessels and stroma of the central and outer layers of the choroid were more visible than normal. The right eye had also an absolute central scotoma, and its vision, eccentrically, was reduced to one-eighth for form, and one-third for color, respectively. Its ophthalmoscopic changes were similar, but probably less advanced; the area involved was smaller. The pigment was less dark and more cloudy, and formed an irregular ill-defined ring in the neighborhood of the macula lutea.

The president said that the ophthalmoscopic changes in this case were slight when compared with the visual defect, and this he took to be an indication that the deeper and most sensitive part of the retina was affected; he did not think treatment was likely to be of any avail.

Mr. Lawford had had under his care a woman, one of whose eyes had a similar affection to the one under discussion; the choroid and retina were both affected, but it was not certain whether the affection was inflammatory or atrophic.

Mr. Tay had seen cases of this kind in young adults, which began with hyalitis; this cleared up after a time, leaving patches similar to those described by Dr. Brailey.

Mr. Silcock thought the progressive obliteration of the choroidal vessels in this case, a kind of arteritis obliterans, was the most marked feature. He knew of no other disease which produced this progressive change except syphilis.

SOME UNUSUAL FORMS OF INTRAOCULAR NEOPLASMS.

This paper, illustrated by lantern slides, was read by Mr. Treacher Collins. The first case was a melanotic sarcoma of the ciliary body, removed from a women, aged 63; the point of interest about it was the congenitally deeply pigmented condition of the whole uveal tract, and the presence of pigment patches in the sclerotic. The second case was a primary tumor of the ciliary body, which had a glandular structure; the patient had come under the care of Dr. Rockliffe, of Hull, in August, 1893. A tumor of the ciliary body was diagnosed, and the eye excised. The anterior part of the growth was deeply pigmented, the posterior part deviod of pigment; in the peripheral less degenerated parts of the tumor the cells were distinctly epithelial in type, and arranged in a way suggestive of a glandular structure. Referring to four other published cases of a similar nature, Mr. Collins expressed the opinion that the tumors had origin in the glands which he had demonstrated to exist in the ciliary body, at the March meeting of the Society in 1891. The next two cases were a brother and sister, each of whom had both eyes affected by a vascular new growth, probably of the nature of a capillary nævus of retinal origin. In the brother the sight began to fail at the age of 20, and progressed to absolute blindness of both eye in the course of a year; they were excised on acount of pain and tension. In the sister the sight began to fail in both eyes at the age of 10 or 11, and progressed to complete blindness in a year. Pain did not come on till thirteen years later, at which time both globes were excised. One of the brother's eyes was obtained for ex-examination. The retina was everywhere detached, except at one spot;its veins were enormously enlarged, and their walls thickened. In the sister's eye no iris, lens, vitreous, or retina could be distinguished. They seemed to be replaced, and the cornea to be partly invaded by a new growth composed of a network of thin-walled cappillary vessels; there was a large cavity in the interior of each eye,and plates of bone had formed on the inner surface of the choroid.

CONGENITAL TRICHIASIS.

Mr. Sydney Stephenson showed two examples of congenital trichiasis of the lower lids in brothers, age 6 and 7 years respectively. In the younger, both eyes were affected; in the elder, the right eye only. The misdirected cilia had produced their usual train of secondary symptoms. The author pointed out that in slight cases, the nasal third of the free edge of the lower lid was concealed by a horizontal fold of skin, which, starting from the inner canthus, ran horizontally outward. In more marked examples, this fold might hide from view the inner two-thirds or even the entire extent of the intermarginal space. The lashes might be displaced without coming into actual contact with the eye; or they might, upon the other hand, impinge directly upon the cornea, and thereby cause considerable irritation. Congenital trichiasis was generally bilateral, but it might affect one eye to the exclusion of the other. In explanation of the condition, Mr. Stephenson suggested that the trichiasis was of mechanical origin, and depended in the first instance upon a relative malformation of the tarsus of the lower lid.

SUGGESTIONS IN THE INTERESTS OF THE EYESIGHT OF CHILDREN.

This paper was read by Mr. Charles Wray. He said there chould be a certain relation between the strength of the eye and the duration of work, and the necessity of allowing frequent short intervals of rest should be impressed upon teachers. The question of night work was gone into; and it was pointed out that many teachers were in favor of lessening night work as much as possible. Teaching should be carried on preferably by blackboard and lantern, avoiding the use of the accommodation in reading. The increase of the myopia, or the rapid diminution of hypermetropia, were to be carefully looked for, and work discentinued for a time.

Mr. Henry Power had recently seen a boy who had been rejected by the naval authorities for defective vision. He had been working long and continuously for the entrance examination, and had passed it with success. Six weeks after the examination his sight was absolutely perfect. A certificate to that effect was given him, and the boy was eventually admitted; he narrowly escaped rejection, owing to a temporary spasm of accommodation.

Mr. Critchett though the subject was of national importance; he had seen three cases in the past year similar to that described by Mr. Power; in one of his cases the boy had obtained a scholarship, but was rejected, because one eye fell just short of the normal; with rest, the spasm passed off, and vision again became normal, and he obtained admission to the navy.

CARD SPECIMENS.

The following card specimens were shown:—Mr. J. Grosvenor Mackinlay: Congenital Dislocation of both Lenses upwards, with marked Stretching of the Suspensory Ligament in One Eye. Dr. Rayner D. Batten and Mr. Holmes Spicer: A Case of Pigmentary Moles of the Retina, with drawing. Mr. John Griffith: Microscopic Section of a Cornea showing Blood Crystals. Mr. Adams Frost: A Case of Syphilitic Conjunctivitis. Mr. Collier Green: Orbital Exostosis. Mr. Kenneth Scott: Drawings of Sclerosis of the Cornea, Sarcoma of the Orbit, Luxation of the Lens. Mr. Kenneth Campbell: Case of Coloboma of the Macula. Mr. Lang: Case of Sarcoma of Choroid.

SELECTIONS.

THE THERAPEUTIC VALUE OF WEAK LENSES.[1]

BY F. C. HOTZ, M.D., CHICAGO, ILL.

The editorial on "Superfluous Spectacles" which a few weeks ago appeared in the *Journal of the American Medical Association*, very justly and ably criticised the tendency, manifested in the practice of many oculists of the present day, to prescribe spectacles in every case of asthenopia. While formerly "weak eyes" have too often been regarded as the result of gastric disorders or systemic weakness, oculists of the modern school are evidently going to the other extreme in assuming anomalies of the refraction or the ocular muscles to be the only sources of discomfort in the use of the eyes. While formerly patients with "weak eyes" have often received unnecessary medicines, they now often receive superfluous spectacles.

I fully agree with the writer of that editorial, that it is time to call a halt to this one-sighted practice. In my clinic it has always been my aim, at every suitable opportunity, to impress upon the minds of my hearers the fact that the complaints of "weak eyes" may be due to a great many other conditions (local and general) independent of the refraction.

But while I am in perfect accord with the intent and purpose of the editorial, I can not sustain the position the writer takes in regard to the lowest degree of ametropia which can be considered as the cause of eye strain; I can not agree with him in drawing the line of usefulness against the glasses of very low power; and I wish to present to you the clinical facts in support of my opinion on this very important and interesting question.

---

[1] Remarks made in opening the discussion at the meeting of the Chicago Ophthalmological Society March 13, 1894.

The statements in that editorial to which I wish to take exception are the following:

1. That the cases in which half a dioptry of astigmatism leads to discomfort or headaches are exceptional and occur, as a rule, only when the general health is below par.

2. That the 0.25 cylinders or spherical glasses less than + 0.75 D. are merely of mythical value.

A careful study of my own observations has led to different results; it has led me to regard the 0.50 hypermetropic astigmatism as one of the most frequent, if not *the* most frequent source of eye discomfort and headaches caused by refractive errors. But inasmuch as the editorial admits that this degree of astigmatism is occasionally a disturbing factor, and that its correction may benefit the patient; inasmuch as it therefore concedes the propriety of prescribing the $^1/_2$ D. cylinders under certain circumstances, I shall not discuss this point any farther, but confine my remarks to the second statement, which absolutely denies the efficacy of the 0.25 cylinder and of spherical lenses less than + 0.75 D. If such weak lenses have really no therapeutic value they should justly be denounced as "superfluous glasses;" if they have any value it behooves those who have tested their efficacy to accept the challenge to furnish convincing proofs for the same.

The mere fact that in a large number of cases of eye discomfort these low degrees of refractive errors are found, proves nothing since we know these slight departures from emmetropia are so very common in the human eye. To assume that the patients would have returned for further treatment if the glasses prescribed had not given relief, is not an argument worthy of notice. And even the mere statement that the patient was relieved is in itself not sufficient evidence for the curative power of these glasses. If such glasses are prescribed to a patient suffering from slight blepharitis, or chronic conjunctivitis, or conjunctival irritation due to lachrymal obstruction or nasal catarrh, and his asthenopic complaints disappear under the treatment of these affections, we should not feel inclined to attribute the relief of the eye discomfort to the use of the glasses prescribed, but should rather consider them superfluous under such circumstances. Or if a patient has been working almost constantly by artificial light, and changes his habit after he received the glasses, we certainly could not regard the relief in such cases as convincing proof for the efficacy of the glasses.

But if all local or distant conditions which we know to produce ocular distress independent of refractive errors, are absent, or have been removed without restoring comfort to the eye; if the eyes are used under precisely the same conditions after the glasses have been prescribed as they were used before; or if an irritability of the eyes has resisted all treatment but is speedily relieved by glasses; then, and then only, are we warranted in attributing the relief of the eyes to the correction of the existing slight refractive errors. These conditions have been strictly adhered to in every one of the cases I now wish to present as clinical evidences of the therapeutic value of weak lenses. And from the fact that among the many cases of asthenopia and headaches I have seen in the last two years, there are only fifty cases in which I have prescribed such weak glasses, this fact alone may assure you that I have not prescribed glasses whenever a small refractive error was found, but that I have carefully considered all the conditions of the case before I decided that the use of the glasses was indicated.

In order to confine myself strictly to the question at issue (the value of sphericals less than 0.75 D. and 0.25 cylinders) I have selected cases only in which 0.25c, 0.50 D., or combinations of 0.25 or 0.50 with 0.25 c were prescribed.

In all patients under 40 years, the refraction was taken under the influence of cocaine and homatropin, but the eyes were tested again after the effect of the mydriatic had disappeared, before the glasses were prescribed.

To every patient who had not afterward reported, a letter was sent, requesting him to inform me whether he had used the glasses and whether they relieved his complaints. By these means I have secured the desired information in thirty cases.

I have divided the whole series of fifty cases into four groups according to the different kinds of discomforts of which the patients chiefly complained.

But I do not propose to give a full report of all the thirty cases; I think a selection of a few cases from each group will answer our purpose as well and will be less tiresome.

1. *Indistinct Vision.* Two cases.

Usually people with a slight degree of astigmatism do not experience any trouble in distant vision; but in the case of a lady, 33, whose left eye was amblyopic, the slight disturbance of vision in the right eye was decidedly annoying; V.=$^{20}/_{xxx}$ which was improved to $^{20}/_{xx}$ by + .25c 110.

The other case of this group is a very instructive instance to show how sensitive some eyes are to the accurate correction of a slight refractive error.

CASE 2.—A gentleman, 46, has been using — .75 D for distant vision since twenty-five years; but though he can see with the glasses pretty well, they do not give him that clear and easy sight to be perfectly satisfactory. He can read $^{20}/_{20}$ with — 75, but the letters are not clean cut; with — 50 V decidedly more indistinct. The round aperture of my astigmometer appears horizontally oblong with — 75; and vertically oblong with — 50; but perfectly round with — 50 ○ 25c 180; and with these glasses the test types and distant objects are perfectly clear. He has used the new glasses now a whole year with with the greatest comfort and perfect satisfaction.

2. *Great irritability of the eyes; constant scowling and winking; sensitiveness to light; in reading the eyes become red, smart and burn and weep.* Twelve cases; reports received from nine; all satisfactory.

CASE 25.—Boy, 12, constant frowning; eyes red and lids swelling after reading a short time. Refraction + 50 ○ + 25c

180; ordered + 25c for constant use. Was relieved, and because his eyes had been doing so perfectly well he left off his glasses several months ago; but after a few days was compelled to wear them because the old symptoms had returned.

CASE 33.—Girl, 15; dull pain in eyes; constant winking; very sensitive to light; mild conjunctivitis. Refraction + 50. Treatment removed the conjunctivitis in six weeks; but had no effect upon the other complaints; thus + 25 was prescribed for constant use for trial. The glasses brought relief at once; and after one year she reports "they still continue to do me good service."

One of the most convincing cases, I think, is the following:

CASE 40.—Bookkeeper, 20; since more than a year has not been free from eye discomfort. After a few hours' work they burn and smart, and often a dull pain compels him to stop work in the afternoon. Very sensitive to light, can not read at all at night. Marked conjunctival irritation and slight fullness of the retrotarsal folds of upper lids. Refraction — 1 ◯ — 25c 180. Conjunctiva was treated; and while patient was not working his eyes rapidly improved; but when he went back to his books the old discomfort returned. About four months' fruitless treatment, + 25c 90 was given for near work, and the topical applications were discontinued. This was six months ago; and he has been working over his books every day without the slightest discomfort.

3. *Asthenopic symptoms: Distant vision is very good, but reading causes pain in the eyes, or headache, a strained feeling over the eyes; a feeling of weariness and fatigue; sight becomes indistinct and unsteady.* Thirty-one cases. Reports received from sixteen; all favorable.

CASE 14.—Boy, 14, never can read longer than a half hour; eyes get red, full of tears and painful. Refraction + 25c 180. These cylinders were ordered for school work; and he reported after two months that the glasses had relieved him at once and continued to be satisfactory.

CASE 41.—Miss N., 22, severe headache after reading or sewing; after twenty minutes' work sight becomes very unsteady; has to close her eyes to rest them a few minutes to continue her work. Refraction + 50 ○ 25 c 90. Ordered + 25c for work. Asthenopia was entirely relieved.

CASE 49.—Mrs. G., 30; since two years frequent headaches and a strained feeling after reading. Last year she was advised to use + 75 for near work, but received little benefit from these glasses. Refraction + 25 ○ + 25 c 90; has used these lenses for reading, and writes now (after eight months); "I do not have the headaches I used to have before, and the print is never blurred as it used to be, which is very satisfactory, for it annoyed me exceedingly."

4. *Headaches and other nervous symptoms which the patients do not connect with the use of the eyes.* Five cases. Reports received from four; one negative, three favorable.

CASE 4.—Mrs. D., 29; since many years headaches for which her physician could find no relief; when recently she complained of pain in the eyes, he referred her to me for examination. Refraction, R. E. + 50 ○ + 25c 180; L. E. + 50 ○ + 25c 90. The 25c were prescribed for constant use, but her husband wrote me, "the headaches were traced to other causes and the glasses therefore discontinued."

CASE 15.—Mrs. B., 35. Since twenty-five years has been doctoring for dyspepsia, frequent attacks of vomiting, and a very distressing tight feeling round her head. Sight very good; her eyes have never troubled her in reading or other near work. Two years ago one oculist prescribed glasses (+ .75) which seem to have been of some benefit to her, inasmuch as the vomiting became less frequent. Refraction + 75 ○ + 25c 90. Ordered + 50 ○ + 25c 90 for constant use. After one week she called to tell me her head was entirely relieved of that tight band and her appetite much better; and two months later she reported she had had no attack of vomiting since she wore the glasses, and had improved very much in health.

CASE 43.—Mr. B., 44; since seven or eight years almost every day frontal headache which usually begins at noon and lasts till he goes to bed; has tried all kinds of treatment advised by different physicians. Refraction + 25c 180: the cylinders were given for constant use (and in addition + 50 for reading) and he returned after six and a half months to tell me he has had no headache since.

CASE 47.—Miss M., 31; since childhood subject to headache starting over the eyes. In the last year the headaches were so frequent that she became quite nervous; can see very well and does a great deal of needle work without ever feeling the slightest discomfort in her eyes. Refraction + 50. I should not have thought of prescribing these glasses, had not the lady remarked that her head felt so much relieved after she wore them five to ten minutes at her second visit when the eyes had recovered from the effect of the homatropin So I decided to let her wear the + 50 for trial; and she has called repeatedly to report of the continued great relief she has experienced.

RESUME.—Of the fifty cases treated with weak lenses, thirty patients have reported good results, one patient has reported a negative result, and nineteen patients have not been heard from. If we take the most unfavorable view possible, and count every one of the nineteen cases not heard from as a failure, we may still be well gratified by the results of the treatment; for it has been successful in thirty out of fifty cases, or in 60 per cent. In the sight of these clinical proofs, it must be conceded that these weak cylinders are not superfluous glasses; that their therapeutic value is not mythical, but real; and that the oculist will render his patients a great service by prescribing these weak glasses whenever in his judgment he has good reason to believe that the existing low degree of ametropia is the source of the patient's distress.

We must not forget that the eye is the most successful in correcting by accommodative efforts the optical disturbances produced by slight degrees of hypermetropia or astigmatism, while in the higher degrees of these refractive errors it does not succeed, and therefore abandons the efforts. The moderate degrees, therefore are the prevailing errors of refraction found in patients complaining of the symptoms of eyestrain.

The degree of ametropia does not constitute the principal condition in the production of distressing symptoms; and experience does not sustain the statement that hypermetropia or astigmatism less than 0.75 D. seldom cause discomfort or headaches. The state of health, the condition of the nervous system, the occupation are very important factors, and frequently account for the fact that in many persons a slight hypermetropia or astigmatism causes great distress, while other persons never experience the slightest discomfort from the same ametropia in kind and degree.

Many eyes can endure a great amount of strain with impunity, while other eyes are so constituted that their powers of endurance are quickly exhausted. One person may need glasses for the correction of a small amount of ametropia, while in another person the correction of a much higher degree is unnecessary, and glasses would be superfluous. We can not draw the line at a certain amount of ametropia; but should correct it, no matter how slight in degree, whenever it leads to disturbances for which eyestrain constitutes the most frequent cause.—*Journal of the American Medical Association.*

THE LOCALIZATION OF PURE WORD-BLINDNESS.

Dejérine and Vialet (*Compt-Rend. hebdom. des Sèances de la Soc. de Biologie*, n. s. 9. t. v. No. 28, p. 790) have reported the case of an intelligent and cultured man, sixty-eight years old, who presented absolute verbal blindness both for letters and for words. There was loss of the comprehension of musical signs —musical blindness—while the ability to read figures and to calculate was preserved. There was no sign of verbal deafness, and no indication of difficulty in articulate speech. There was no mind-blindness, and no visual aphasia. The power of mimicry was retained, as was also the ability to write spontaneously and upon dictation. Transcription was, however, imperfect and difficult. Motility was preserved, as was also general and special sensibility and the muscular sense.

These symptoms had been present for four years. Death occurred suddenly, paraphasia and total agraphia having existed for two days without a sign of verbal deafness, and general intelligence and the power of mimicry remaining intact. Upon *post-mortem* examination an area of recent red softening was found in the inferior parietal convolution and angular gyrus of the left cerebral hemisphere; while areas of old, yellowish atrophic lesions were found in the lingual lobule, the fusiform lobule, the cuneus, and apex of the occipital lobe, with secondary degeneration in the splenium of the corpus callosum, and pronounced atrophy in the optic radiations. The right hemisphere was perfectly intact. Upon histologic examination profound alterations were found in the posterior portion of the lingual and fusiform lobules, particularly in the collateral fissure. All of the white matter of these convolutions was distroyed and replaced by cicatricial tissue. The lingual lobe was apparently the less profoundly affected, though on microscopic examination its white fibres were found to be almost entirely disorganized; at the level of the lower lip of the calcarine fissure, however, a portion of the calcarine stratum had withstood the process of destruction. Advancing towards the cuneus the cortex progressively resumed its normal appearance. These characters indicated that the lesion was least pronounced at the level of the lower lip of the calcarine fissure, and was especially localized to the fusiform and lingual lobules. The lower portion of the ventricular cavity was likewise involved in the process of softening. The tapetum, the optic radiations of Gratiolet, and the inferior longitudinal fasciculus of Burdach were entirely destroyed. The lesion became gradually less marked toward the outer wall of the ventricle. All of the structures, in the descending branch of the calcarine fissure participated in the softening. From the anatomic findings in this case, and from physiologic considerations, the deduction is drawn that the lower portion of the inferior longitudinal fasciculus of Burdach contains physiologically differentiated fibres that connect the visual zone with the zone of language.—*Am. Journ. Med. Sciences.*

REVIEWS.

On Outline of the Embryology of the Eye With Illustrations from Original Pen-Drawings by the Author. By W. A. Holden, A.M., M.D. The Cartwright prize essay for 1893. G. P. Putnam's Sons, New York & London.

This is a neat little volume in which most that is known about the embryology of the eye may be found clearly put and well illustrated by the author's drawings.

Annual of the Universal Medical Sciences. Edited by Ch. E. Sajous, M.D. and Seventy Associate Editors for 1893. Philadelphia, The F. A. Davis Company, publishers.

This new series, as usual, in five separate volumes is a worthy successor of its predecessors.

Die Augenaerztlichen Operationen von Dr. Wilhelm Czermack. (The Operations on the Eye). 5th fascicle, with 5 illustrations. Wien 1893. Carl Gerold's Sœhne.

We have taken occasion in a former number of this Journal to recommend this work to our readers. This new fascicle which contains particularly the operations on the conjunctiva is of as high a character as the former ones.

The above books can be had from J. H. Chambers & Co., 914, Locust street, Saint Louis, Missouri.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

Vol. XI. MAY, 1894. No. 5.

ORIGINAL ARTICLES.

VISIBLE CIRCULATION IN THE RETINAL VESSELS WITH THROMBOSIS OF THE CENTRAL VEIN. WITH REPORT OF A CASE.

BY DR. S. C. AYRES, CINCINNATI.

Visible circulation in the retinal vessels was first described by Prof. Von Jaeger at the very dawn of the present era of ophthalmology. He saw as much with his clumsy old ophthalmoscope as modern oculists can see with instruments of the most approved and recent pattern. His infinite patience and painstaking have given us ophthalmoscopic pictures of eye grounds which have never been excelled for accuracy or excellence of execution. When, therefore, he describes the phenomenon we may rely upon his statements as correct, He describes the circulation in both veins and arteries as if fine sand were passing through a glass-tube. This appearance changed into that of granular masses in transparent fluid and finally into cylinders. These cylinders could be seen moving along, sometimes rapidly, then more slowly, and finally all motion ceased, only to begin again after a longer or shorter interval.

His cases, however, do not seem to be associated with pathological conditions, such as are described by later observers, as vision was restored, but to depend on some mechanical interference with the retinal circulation. Graefe, Liebreich, Schweigger and others have recorded cases of visible circulation in the retinal vessels.

In the *Archives of Ophthalmology* of 1881, page 138, Dr. Peter A. Callen, of New York, reports a case of peculiar circulation in the retinal arteries and veins. It was in a person 66 years of age, and the blindness came on at night. At first there was total blindness, but later on he could see a light in the lower and outer portion of the field. The vessels were somewhat reduced in size, and in this respect it differs from other cases. He says. "It appears as if the red and white discs were rapidly coursing through both arteries and veins. The white spaces were only half the length of the red: the red being about twice the diameter of the vessel in which it ran." He says: "It was not a case of embolism, but rather one of retro-bulbar compression of the optic nerve within its sheath, due to inflammatory products." Patient was able to count fingers at two feet in the lower and outer field.

In the "Transactions of the American Ophthalmological Society" 1884, page 690, Dr. Schell, of Philadelphia, describes a case of visible circulation in the veins and arteries seen by him. It was in a female, 71 years of age, who gave a history of sudden blindness. The retinal vessels were attenuated and "the veins very much more swollen than the arteries." The blood stream which flowed out from the disc was broken into numerous very short cylinders; and it could be seen returning by the veins, broken in the same way. This movement of both arterial and venous blood was plainly visible for a period of nineteen days, when it ceased and the vessels became very thin.

REPORT OF CASE.

W. W. H,, aged 48, well nourished and in active business life. He has suffered for the past ten years with migraine, and has had repeated attacks of gout in the big toe. During one of these attacks, nine days ago, when he rose from the couch on which he was lying, to go to the adjoining room, his right eye became suddenly entirely blind. He said it seemed as if a thick pad had been placed over it. He did not suffer from dizziness at the time. He had recently had several attacks of transient blindness in this eye. The obscuration of vision lasted but a short time and then the eye cleard up again. But this time the blindness remained permanently and when I first examined him there was only perception of light in the lower and outer field and the pupil was moderately dilated.

The ophthalmascopic picture was as follows:

The central portion of the retina was œdematous and opaque through which the cherry-red macula lutea showed clearly defined. The optic disc was cloudy and somewhat indistinct. The arteries and their branches could be seen although they were not as full as normal. There was no point where a retinal artery seemed to be plugged or obliterated.

There was a hæmorrhage about two Ds below the disc, and one a short distance above the macula.

The main trunks of the veins were all very much dilated. The main trunk below which goes towards the macula was enormously dilated.

The most interesting feature was the visible motion of the blood in the *veins* as it came towards the optic disc. I first noticed this phenomenon in the branches near the disc, but upon closer examination found that it could be traced to the smaller branches out as far as the equator, both above and below. The blood column was divided by white spaces which were about one-third or one-fourth the length of the red spaces. The flow was continuous without pulsation.

There was no motion of the blood visible in the arteries. They appeared nearly normal, not quite as full as in the fellow eye.

A week later I saw my patient and the veins were abnormally distended, but all motion in them had ceased. The disc was pale and the œdema of the retina had disappeared. The hæmorrhages were absorbing and there was still feint perception of light in a small area of the field.

I have described this as a case of thrombosis of the central vein. Certainly it was *not* an embolism, although there were present the œdematous retina, the cherry-red macula lutea and the sudden loss of vision. The central retinal artery was not plugged nor were any of its branches so far as they could be seen.

Gowers says that "in thrombosis of the retinal vein the loss of sight is less complete them in embolism of the artery, and the opthalmoscopic appearance differs in that the arteries, as a rule, although they may be slightly narrowed, are not empty, or filiform, in the enormous dilatation of the veins—and in the circumstance that venous pulsation can usually be observed, and that the veins may appear interrupted here and there." This description seems to coincide very accurately with my case. The sight was not totally lost, there was perception of light in one portion of the field, the main trunks of the veins going upward and downard were enormously distended, presenting a sausage-like appearance as described by Michel, and the arteries were partially filled.

ALBUMENURIC NEURO-RETINITIS IN PREGNANCY AND ITS TREATMENT.

BY L. R. CULBERTSON, M.D., ZANESVILLE, OHIO.

Oculist to the City Hospital; United States Pension Bureau, etc.

Albumenuric neuro-retinitis during pregnancy is a most grave affection which comes frequently to the notice of the oculist as well as of the general practitioner. S. C. Ayres in the Cincinnati *Lancet and Clinic* says, that "in cases of Bright's disease, whether puerperal or non-puerperal 8% suffer from albumenuric retinitis.,' The percentage of blindness or partial blindness is very high in this affection. As to the mortality form puerperal albumenuria, we will quote M. Imbert Goubeyre (Cazeaux Midwifery), who says, "of 65 cases of puerperal albumenuria unaccompanied with eclampsia, 21 proved fatal during pregnancy and lying in; and six from the third to the fourteenth month after delievery; 5 cases became chronic and were found to be still existent, two, eight, ten and fourteen months, and seven years after labor." J. H. Wilson, in "Transactions International Medical Congress," 1887, citing Rosentein, says that "nephritis occurs once in every 136 cases of pregnancy."

I will first report a very interesting case now under my observation and will then give statistics of this disease. Mrs. H. C., aged 36 years; a primipara; no specific discase; strong and healthy; married first cousin. At the beginning of the seventh month she consulted me with regard to her eyes, stating that objects were blurred and appeared green in color, and that she saw flashes of white light before her. On ophthalmoscopic examination, I found both discs and retinæ hazy, due to albumenuric neuro-retinitis. On examination, the urine was found to contain three-fourths albumen. The microscopic examination showed the urine to be loaded with hyaline, epithelial and a few opaque granular tube casts and large quantities of renal epithelium. The heart was normal; the legs somewhat dropsical; infiltration of the cellular tissue of the orbits with slight albumenuric retinitis of the right eye. I prescribed vapor baths, milk diet, strychnia, recumbent posture in a dark room, tr. iron chloride xx gtt. every four hours, cream of tartar and jalap, and later saline cathartics. Dr. Theophilus Parvin, of Philadelphia, advised me to use milk diet and warm baths. Dr. Thad. A. Reamy, of Cincinnati, O., said, "if the case goes to term, the woman will almost certainly be permanently blind. If the eyes can be saved, *induce the delivery at once.* Your treatment has been faultless; up to the highest standard." Dr. Tod Gilliam, of Columbus, O., said, that "the prognosis in these cases was very grave," and prescribed Basham's mixture every three hours. Dr. J. C. Da Costa, of Philadelphia, Pa., (the obstetrician) advised "milk diet and acetate of potash in xx gr. doses every three hours,—which was used with benefit for some time—and if this does not make a great improvement in two weeks, bring on labor."

Drs. Bell and Holston, of Zanesville, advised premature labor.

Labor was induced by Dr. J. G. F. Holston, the eminent surgeon and obstetrician, and the patient had an easy labor, and no convulsions. The child lived a week and died of pneumonia. For the first week after delivery, the albumen was one-half by volume, and numbers of tube casts were found in the urine. She was then taking tr. iron, sweet spts. of nitre, acetate of potash and occasionally digitalis. Her vision had not improved any up to that time, and she could not even count fingers, with either eye, at a distance of six inches. Seven days after delivery, I put her on mercurial ointment, rubbed into the arm-pits and groins twice daily, using about three-fourths of a teaspoonful each time. I also, gave v gr. of iodide of potassium three times daily which was soon increased to vij gr. I, further gave $^1/_{30}$ gr. of sulphate of strychnia three times daily, which was increased to $^1/_{20}$ gr. in seven days. The last three medicines were given for the eyes, but I have reason to believe that the mercury and iodides exerted a beneficial effect on the kidneys in this case, as the albumen began to diminish as soon as we commenced their use. The albumen now equals one-seventh to one-eighth, and for one week there have been no tube casts nor any renal epithelium. The mercury was pushed to the point of touching the gums. As soon as this point was reached, there commenced a remarkable improvement in the vision. To-day—five weeks since labor—near vision. R. E.=$^{5}/_{\text{xxx}}$ Sn., L. E.=$^{8}/_{\text{xxx}}$ Sn.

The patient is a musician and a very emotional woman, and hence we deemed it advisable not to tell her of the death of her child until we could get considerable improvement in her vision, as the shock might make her vision worse. It could do this in two ways; first, by the shock causing the kidneys to act less freely and increasing the engorgement of the veins of the retina and thereby causing great danger of apoplexy of the retina; secondly, the diminished action of the kidneys would increase the uraemia and consequently increase the neuro-retinitis. In albumenuric retinitis the vessels of the retina are always very brittle and therfore retinal hæmorrhages are very common in this affection. The child was removed from the mother under the plea that the mercury and strychnia would kill it, and hence it must be nursed by a wet nurse. Three weeks after its death we told her of its death, and her sight was not affected by it.

I wish to emphasize the importance of keeping from patients suffering from albumenuric retinitis every thing that would cause mental worry or shock, as anything that causes nervousness aggravates the disease of the kidneys, and is of additional danger to the eyes. This patient does not yet know that she has kidney disease. The only oculist consulted was Prof. William Thompson, of Philadelphia, who concurred with we as to treatment and further advised cupping over the loins, followed by counter-irritation with spts. of turpentine, and then by a poultice of digitalis leaves. This is a very beneficial treatment.

The patient is now taking Basham's mixture, potassium iodide, and strychnine, with daily sponge baths of alcohol. The greatest danger in this affection is that the neuritis will result in optic atrophy hence I advise the use of absorbents and strychnia for some time after recovery of sight, and the strictest watch over the condition of the kidneys and skin for years after. If the Bright's disease is combined with valvular heart disease, look, after the condition of the heart, giving digitalis, etc; if there is the "booming second sound" of the heart and high arterial tension (symptoms diagnostic of contracted kidney)[1] give long courses of nitro-glycerine or bi-chloride of gold and sodium, as advised by Prof. Robert Bartholow, of Philadelphia; also, diuretics of Vichy, Carlsbad, Lithia, etc

I desire to point out that nitro glycerine must not be given until several months after recovery from the acute stage, as there is danger that the greater volume of blood caused by its use might produce retinal hæmorrhage.

I will keep this patient in a darkened room for at least a month continuing strychnine and iodide and, if indicated, mercury. Give dark glasses when patients first go into the light, to be worn for some time. Should there be optic nerve atrophy in these cases, the same treatment is indicated, only that the strcychnine should be given hypodermatically in the temples, and phosphorus in some form should be given internally.

In closing my remarks as to the treatment, I will say that I deem it advisable to try medicine for a very short time, but if there is not a very marked improvement, bring on premature labor in the interests of the mother's sight, and perhaps of her life. Had this case gone to term, she would have almost certainly died in labor; and, had she lived, she would have been permanently blind. Blindness is not the only danger in these cases, as some become deaf, which, however, is a rare occurrence, (a case reported by J. H. Wilson, in the Transactions of the Ninth International Medical Congress, became permanently and almost totally deaf), others become paralyzed (Macgregor in *British Medical Journal,* for 1892), and some become insane (Cazeaux). My patient was slightly deaf before delivery, but hearing is normal now.

---

[1] The consensus of opinion of almost all writers is that where there is albumenuric retinitis there is hypertrophy of the left ventricle and sclerosis of the arteries. This is corroborated by autopsies.

Some (Cazeaux) have held that albumenuria may be due to pressure of the uterus on the vena cava, or the aorta, or both. (A. F. King, *American Journal of Obstetrics*, 1887, Nos. 3 and). If this be true, the patient should improve very rapidly after delivery. (Braun found in 12 autopsies after death from puerperal eclampsia that there was "cyanotic kidney" due to impeded return of blood from the renal veins caused by pressure of the gravid uterus). Where tube casts persist in the urine, the prognosis is extremely grave.

I think it advisable for all physicans to caution mothers to have their daughter's urine examined before they contemplate matrimony.

REMARKS.

The ophthalmoscopic appearance of the retina according to Juler ("Ophthalmic Science and Practice) is as follows:

1. "White spots or patches as small as a pin's head, more or less collected into groups around the yellow spot. Sometimes there are seen white or yellowish-white straiæ, arranged in a radiating manner around the same focus, etc.

2. "Hæmorrhages are usually found; these may be small and point-like, but they are usually striated and torch-like in appearance."

The "choked disc," hazy retinal vessels, characteristic silvery spots on retina, etc., are beautifully shown in De Wecker's and Jaeger's Atlas ("Maladies du Fond de L'Oeuil par De Wecker et Jaeger). The same silvery spots on the retina are found in diabetic retinitis, (H. Culbertson on Glycosuric Retinitis, in Detroit *Lancet* 1880); also, in meningitis and brain tumor. (C. S. Bull in *Opthalmic Review,* 1886). Swanzy ("Diseases of the Eye.") says; "Some of the white spots are caused by fatty degeneration of the outer layers of the retina (the retinal vessels pascing over them), others by hypertrophy of the nerve fibres (the retinal vessels hidden by them). The fine dots about the macula lutea are the result of fatty degeneration of the inner ends of Müellers fibres.

Loring (*Opthalmic Review*, 1882), says of these cases after delivery that, "there was improvement when the menses reappeared." "And in the case of a woman who had albumenuric retinitis in her first pregnancy with failure of sight in one eye, the sight of the same eye failed again in the second pregnancy, and in the third pregnancy the other eye failed." (*Ibid*). L. Howe (AMERICAN JOURNAL OF OPHTHALMOLOGY for 1885.) says, "It seems fair to infer that, induction of labor is warrantable when the retinitis appears in a comparatively early stage of pregnancy and persists in spite of proper treatment, but is not warrantable in the last few weeks, in spite of the greater ease with which it is accomplished, unless the inflammation is unusually severe." The same author gives the opinions of such obstetricians as Prof. Elliot, Prof. Lusk, Prof. Playfair, Dr. Fordyce Barker, etc , all of whom favor early induction of labor. Kilian (L. Howe in AMERICAN JOURNAL OF OPHTHALMOLOGY, 1885), reporting 161 operations in 1883, says that "considerable more than one-half of the children are rescued with the insignificant mortality of one in fifty mothers." Howe (*Ibid.*) in his statistics says that, "when vision begins to be impaired only in the last two weeks of pregnancy, recovery follows almost invariably. Of those described as being in the eighth months or thereabouts when retinitis commences, not one-half recovered and several did not materially improve. Finally, when this began earlier than what was estimated, as the middle of the seventh month, when nature did not interfere by bringing on a miscarriage, and when the patient escaped with her life, it was only to remain blind forever afterwards." In regard to the amount of albumen as an index to the danger, he says: "The presence of a tenth of one per cent is sufficient to attract attention. The presence of one per cent should excite apprehension, and so great a quantity as two or surely three per cent, is usually an indication of great danger. If diuretics are administered for the disease, and the quantity of water is thereby increased, the proportion of albumen might appear relatively to be diminished, although in reality it remained the same." Risley (*Ophthalmic Review*, 1886), has noticed aphasia and amnesia in these cases.

CASES AND BY WHOM REPORTED.

BLINDNESS.		PARTIAL RECOVERY OF SIGHT.		RECOVERY OF SIGHT.	
Risley (Philadelphia) .	2	Wadsworth (Boston) .	1	Holmes (Chicago) . .	1
Hogg (England) . .	1	McNamara (England)	1		
		Henshaw (England) .	1	G. S. Ryerson (Canada)	1
H. Power (England) .	1	L. Howe (Buffalo) . .	2		
Herter	1	A. Emrys-Jones (Eng.)	7	Macgregor (England) .	1
		Brecht (Berlin) . . .	1		
Cronyn (Buffalo) . .	1	T. R. Pooley (N. Y.) .	1	Arango (N. Y.) . . .	1
Howe (Buffalo) . . .	1	Moore	1		
		L. Culbertson (Zanesville)	1	——— (of Pittsburgh, Pa.)	1
Sinclair (Boston) . .	1	Abbott (Boston) . .	1		
Wilson (Chicago) . .	1	Auger	1	Risley (Philadelphia) .	1
		Wilson (Chicago) . .	3		
Total	9	Total	21	Total	6
	24.99%		58.31%		16.66%

After making a thorough search of the *Journal of the American Medical Association*, *Archives of Ophthalmology*, *Ophthalmic Review*, *Transactions of the American Ophthalmological*

Association, British Medical Journal, Medical Record, etc., I have formulated the preceding table. This includes only cases of albumenuric retinitis *caused by pregnancy* and *does not* include any cases that had ended fatally at the time they were reported. It must be borne in mind that some cases who recover their sight are not reported by obstetricians.

A CASE OF PUERPERAL ALBUMINURIC NEURO-RETINITIS WITH ENORMOUS AMOUNT OF EXUDATION. RECOVERY. SUBSEQUENT PREGNANCY AND PARTURITION AT TERM WITHOUT URÆMIC SYMPTOMS.

BY ADOLF ALT, M.D.

In conjunction with Dr. L. R. Culbertson's paper in this issue, and considering the general opinion of the fatality in case of conception and parturition after uræmia has been once produced by pregnancy, the following case may be of some interest:

On December 15, 1891, I was called to see Mrs. C. C., aged 26, on account of very poor eyesight. On seeing her I learned that she had been confined of a stout, healthy child two weeks previously by means of forceps, and that she had come very near losing her life. She further stated that her vision had been very poor for two and a half months, and that a month before the birth of the child she had had severe convulsions. During the last weeks she had œdematous swelling of the legs. In spite of all this she had been allowed to carry her child to the end of the term, and no spasms took place during labor, as the husband and nurse stated.

I found her in a very weak condition; yet nursing her baby. Vision was barely $^{8}/_{cc}$ in the L. E. and $^{14}/_{cc}$ in the R. E. The pupils were semi-dilated.

On ophthalmoscopic examination, it seemed at first as if the whole background had assumed a silvery white appearance. On closer examination I found that the periphery of the retina was free from exudation, but only the periphery. The remaining parts of both retinæ were apparently one mass of exudation, with a few branches of bloodvessels visible, and here and there a striped hæmorrhage.

The diagnosis being clear, without examination of the urine, I reported to her physician the result of my examination, and expressed to him and to her husband my grave fears of total atrophy of the optic nerves. I also impressed on the husband's mind the necessity of preventing any further pregnancy, or of not allowing it to go to full term, in case this unhappy condition should recur.

Her physician, besides giving tonic treatment, ordered two quart-bottles of lithia water a day, and from what I heard, made very light of what I had told the husband.

On August 15, 1892, the patient called on me at my office to see whether glasses would not improve her vision. To my astonishment I found now but comparatively small remnants of the severe former retinal affection. A number of irregularly arranged pigment-spots in the macular region, anæmic optic discs and thin retinal vessels, however, told the tale. Her vision was now R. E. $^{20}/_{\text{LXX}}$? and L. E. $^{20}/_{\text{C}}$. The vision in the left eye was brought up to $^{20}/_{\text{LXX}}$ by $+ 0.75$. I recommended strychnia, which was, however, not used.

On March 5, 1893, patient again called on me, sent by her physician to see whether any new pathological signs could be found in the eyes, as she was again *eight and one-half months* pregnant. She stated that she felt well, but had had a few "dark spells" of late. I found V. in either eye $^{20}/_{\text{LXX}} +$; no albumen in the urine. The ophthalmoscopic picture was unaltered in every respect.

About two weeks later she was confined without trouble; and when I saw her in September, 1893, everything had remained in *statu quo*.

SELECTIONS.

PANNUS.

BY JOHN I. M'GUIGAN, AM., M.D., PHILADELPHIA.

There is scarcely any pathological condition more disturbing to the peace of mind of the oculist than the condition called "Pannus." These cases necessarily represent a relative chronicity and frequently tell the tale of various visits to as many specialists, with varying result as far as the statements of the patients themselves can be taken.

The diagnosis in itself seems to present no difficulty for the trained observer, but the prognosis as to length of time is frequently disappointing to the patient, and the almost everlasting complaints are wearying to the physician.

It takes but a cursory glance at the works on the "Disease of the Eye" to see that the treatment of this condition has been anything but satisfactory as to uniformity of curative measures. Many methods are given and rules laid down only to be denied by equally able authors.

First, as to the pathology, I am inclined to adopt the classification given by Fuchs: "Pannus consists in the new formation of a tissue resembling granulations directly beneath the epithelium of the cornea. Pannus is to be looked upon as an affection of the conjunctival layer of the cornea, and in every case is simply one of the symptoms of a conjunctival disease,—that is, either of conjunctivitis trachomatosa, or conjunctivitis lymphatica. We, hence, make a distinction between pannus trachomatosus and pannus lymphaticus."

Again, "Pannus is a trachomatous affection of that part of the conjunctiva which covers the cornea." He then enters into a discussion of the pathology, during which he especially calls atiention to the frequency of location, at least in the beginning, in the upper portion of the cornea.

Pannus lymphaticus he describes: "Instead of appearing as separate circumscribed foci, the exudate (conjunctivitis lymphatica) may occur under the form of a continuous new formation of tissue upon the surface of the cornea,—that is, under the form of *pannus*. This is called pannus scrofulosus, to distinguish it from trachomatous pannus. It does not, like the latter, show a predilection for the upper part of the cornea, but develops from any spot whatever upon the corneal margin. "The etiology of this latter affection is given in a couple of words," scrofulous diathesis.

The various methods of treatment through which the cases of pannus trachomatosus go may be summed up: scarification of the conjunctiva; incision into the granulations themselves; then cauterization with chemicals, hot iron, galvano-cautery, and excision of a portion of conjunctiva. To cure the existing state of affairs in the cornea some pin their faith to *peritomy*, partial or complete; others go to the extent of using the inoculation method, introducing pus from a case of ophthalmia neonatorum,—a course which Juler condemns: "An acute attack of purulent conjunctvitis is thus developed, and is *sometimes* follows by clearing up of the cornea. Not unfrequently, however, the process is followed by complete destruction of the eye. The contagious and destructive nature of this remedy renders it very objectionable. It should only be adopted as a last resource. Of de Wecker's method there seems to be much diversity of opinion, some, like him, obtaining wonderful results; others partial cures; while others experienced no good from its use.

In treatment of pannus lymphaticus the most important consideration would seem to be hygienic. The proper nourishment and surroundings for the patient are essential. The patient must be kept out-of-doors; the judicious use of baths must be enjoined; while the remedies are codliver-oil, iron, quinine, and strychnia. Careful attention must be given to bowels and secretions.

I have been interested in and I have seen the effects of these methods given above, except that of using pus from ophthalmia neonatorum, and, like others, I have found there was no uniformity of results,—in other words, each case seemed to be a law unto itself.

In view of these repeated successes and failures my latest case makes me more hopeful of better and more uniform results in the future.

Miss S., 24 years old, came to me complaining of a sore eye. She had had some trouble with the same eye when a child, and she had been cured at Wills Eye Hospital. She was free from trouble until about one year ago, when the right eye began to annoy her periodically. For some months back the difficulty grew much worse,—a distinct patch making its appearance on the inner and lower quadrant of the cornea. This made her shrink from the light, and finally compelled her to wear alternately a patch and smoked glasses, which latter she was now wearing.

Her general appearence reminded one of Bartholow's apt description, "Gelatinous children of albuminous parents." She spoke of recurring tumors in her back. These swellings would grow larger without apparent inflammation, and then they would discharge their contents and continue to run until the "core" was discharged, when healing would take place. She was regular in every way, save that she had periods of obstinate constipation.

On examation I found a distinct pannus covering the inner or nasal half of the cornea, more marked in the lower portion. The upper and lower lid were slightly hyperæmic, but otherwise appeared perfectly healthy. The pupil was minutely contracted.

I placed the patient on syr. ferri iod. and ordered a wash of boric acid, aq. menth. pip., aq. camphoræ, and muc. sassafr. med. On the next visit I began using mild solutions of nitrate of silver, and I ordered her sol. atropiæ (gr.j to ʒiij) 1 drop once daily. The latter seemed to have no effect, although the iris looked normal. I used a solution of the same strength, thinking she had not put it in,—at least, not properly,—but I got no better result. The pupil did not react to light and shade. Later, I began to use sol. zinci chlor. (gr.v to ʒj), but improvement seemed slow; so I tried tannic acid, of a great variety of strengths, and, the patient growing tired, I resorted to peritomy, with only temporary effect; so I used insufflations of "mild chloride," which seemed to do considerable good for a time. (Previously stopped the iodide.)

About this time I noticed, somewhere in the course of my reading (journal), the suggestion to use papoid in eye diseases. I began to employ this drug in conjunction with the calomel, in the follwing prescription: papoid, gr.v; hydrarg. chlor. mit., ʒj. This was flicked into the eye once daily, using the boric lotion as before.

Slowly the eye began to mend until it grew much clearer, and finally entirely well, the iris in the meantime returned to the natural state of mobility. In the course of four weeks the cornea was restored. During the treatment she experiences no ill effects save a pain in the neighborhood of the caruncle, where the medicament would collect in thin strings, which she would remove from time. Cocaine sol. (4 per cent.) occasionally used relieved this pain. During the whole treatment special attention was given to regulating the bowels.

I regard this case as one of pannus lymphaticus, and I wish to commend this mode of treatment to other practitioners; and, by their and my own further observation, we can determine the value of this remedy to the eye specialist.—*Medical Bulletin.*

PISTOL-BALL WOUND OF THE BRAIN DIVIDING THE LEFT OPTIC NERVE IN THE OPTIC FORAMEN; MENINGITIS; AUTOPSY.[1]

THOMAS G. MORTON, M.D.

John B., aged twenty-nine years, was brought to the Pennsylvania Hospital about seven o'clock in the evening of January 5, 1894. Shortly before admission he received a pistol wound of the face; the ball completely divided the right lower eyelid, penetrated the upper maxillary bone, and passed apparently backward and to the left, when its further course could not be determined The patient was semi-unconscious, but could be roused; he did not seem markedly shocked, but since he had been drinking heavily the symptoms were masked. Temperature was barely 98°, pulse 66, and respiration 24. He gave his name and address, but appeared unable to make further replies. There was moderate hæmorrhage from mouth and nose. Breathing had been heavy, but became easier an hour or so after being placed in bed.

On admission the pupil of right eye was found moderately contracted, but sensitive to light-stimulus; the pupil of the left eye was contracted, but was immovably and widely dilated two hours later; an effort was made to determine the location of the ball by an incision below the eye. Examination of the wound by the introduction of the finger led to the conclusion that the orbit was not involved, but that the ball had passed across through the nasal cavity to the left and had entered the brain, and in its course had injured, if it had not destroyed, the optic nerve.

The following day the patient was taken before the class; he was then rational, complained of no pain, and replied to every inquiry. The movements of both eyes were normal; vision was apparently not disturbed in the right eye, large and small objects being distinctly seen; left eye totally blind, pupil widely dilated, yet sensitive when light was thrown upon the right.

---

[1] Read before the Philadelphia Academy of Surgery, February 5, 1894.

January 8. General condition less favorable; difficult to arouse; slightly delirious at night; temperature 103°; pupils constantly varying; right more contracted.

January 10. Somewhat violent at times; temperature 102.5; required to be confined in bed.

January 11. Able to reply to questions, sat up in bed: The following examation was made by Dr. Thomas H. Fenton:

"Right eye. Pupil about 6.5 mm., somewhat oval horizontally, feebly sensitive to light-stimulus.

"Optic disk fair size, somewhat oval vertically, rather dull in color, well outlined, margins slightly elevated; fundus rather deep in color; veins very full; arteries somewhat contracted; media clear, so that all details are possible, but general definition defective owing to the slight haziness of cornea; tension normal.

"Lest eye. Pupil 4mm., not absoluted immobile but not responsive to light-stimulus, either with right eye opened or closed; somewhat sensitive when right is covered. Optic disk fair size and shape; definition very good; the temporal half is leaden white, devoid of vessels; all vessels contracted on the nasal side of disk and throughout fundus, which has distinctly anæmic appearence; arteries very much contracted; no structural change except just below disk margin, where there is a small horizontal hæmorrhage 1mm. in size; media perfectly clear; tension normal; eyes in good position; movements normal. Large ecchymosis on bulbar conjunctiva, temporal side, observed to-day."

January 16. Patient has rapidly failed, delirium has continued since last report, and he died at 11.10 with a temperature of nearly 104°.

POST-MORTEM.—The ball entered the superior maxillary bone just below the orbital rim, about one-eight of an inch to ths inner side of the infra-orbital foramen, passing upward, backward, and to the left through the nasal cavity, fracturing the ethmoid and vomer; the orbital plate of the frontal bone was fissured, destruction of left olfactory, breaking through the body ot the sphenoid, tearing away the lesser wing on the left side, completely severing the left optic nerve in its groove or foramen; the ball then passed into the left frontal lobe, where it was found just inside a large wound which continued upward and slightly backward and penetrated nearly to the upper surface of the brain.

The brain tissue in and around this wound was softened and degenerated. Several fragments of bone were carried in to the brain substance by the ball, which was flattened and very rough. Evidence of suppurative meningitis existed over the entire base of the brain, and the vessels of the pia mater were markedly congested.

REMARKS BY DR. FENTON.—The case as reported by Dr. Morton is not only interesting because of its extreme rarity, but besause it affords an opportunity for conjoined study by the surgeon and the ophthalmologist. Nearly all the reference obtainable by a careful search of the literature of wounds of the optic nerve have been studied, and no case exactly parallel has been found. The question of main importance in this part of the record is, as to how far the extent of the injury can be determined and the foreign body located by an examination of the eye. That such examination somewhat lessened the obscurity in this case seems reasonable. The patient gave a very credible history of previous good vision in the left eye, which yet was found to be completely amblyopic; while the right, in which some disturbance was to be expected, was practically uninjured. A valuable observation made by Dr. Claytor, the resident, is that on the date of admission, January 5. at 7 P.M., the pupils were of equal size, and that two hours later the right was contracted and the left widely dilated. The eyes were in good position, the associated movements were normal, no loss of motility no impairment of sensibility, no surface anæsthesia, no hyperæsthesia. Externally, then, there was nothing but the inequality of the pupils, and the ecchymosis of the bulbar conjunctiva in the left to serve as a guide. It must be remembered that the first examination which could be secured was made five and a half days after the injury. It is reserved for the opthalmoscope to give some suggestion as to the scope of injury and the direction taken by the bullet; more especially because the atrophy, though not complete, was clearly of recent origin, and not the result of long-standing disease. This suggested that there had certainly occurred, as stated at the time, a hæmorrhage into the sheath, and, in all probability, a nearly complete division of the nerve. This view was further confirmed by an examination made on the morning, and again on the evening of the 14, when it was found that the vessels were still more thread-like and the optic disk paler; right pupil oval as before, 6 mm., left 8 mm., circular. It seemed quite certain, therefore, that the point of injury was quite well back, because, as Fuchs says; "It is only when the optic nerve has been injured so far forward that the central vessels are at the same time divided that characteristic opthalmoscopic symptoms can be made out at once. In such cases there develops immediately after the injury a picture analogous to that of embolism of the central artery. The arteries of the papilla and the retina are bloodless, the retina soon becomes clouded—a sign of its death." As then expressed, the examination of the eye externally and internally seemed to favor the surmise that the tract of the bullet was to the left and upward, rather than backward and downward, although the precise route and the extent of the injury occasioned by its passage could not be determined. The occular state certainly did not suggest trouble at the base. An interesting case strengthening this belief is furnished by Benson: "Perforating gunshout wound of the right eye. Immediate collapse of ball—follwed in a few seconds by complete amblyopia of the left eye. Opthalmoscope showed a simple atrophy with no thickening of the coats of the vessels, which were very small. * * * There were no symptoms of central mischief."

It is evident that the most important appearence in this case was the peculiar condition of the optic nerve and retina; although the disturbance of the pupils seemed to indicate some injury to the oculo-motor and the fifth nerve. This lent more credit to the case because, as Mitchell says (Injuries to the Nerves): "Muscular injuries of the motor nerve of the eye which do not at once involve loss of life, are rare." It is interesting to add that this quotation is taken from an account given of a case seen by the author in consultation with Dr. Morton, in which he, the author, states that the case stands alone in the history of oculo-motor-nerve lesions.—*Medical and Surgigal Reporter.*

A CASE OF SPONTANEOUS ABSORPTION OF A CATARACTOUS LENS.[1]

T. B. SCHNEIDEMAN, M.D.

Adjunct Professor of Diseases of the Eye, Philadelphia Polyclinic; Assistant Surgeon to Wills Eye Hospital; Oculist to St. Christopher's Hospital Dispensary.

A. B., aged 65 years, male; vision of the left eye began to grow dim twenty years ago. The dimness increased until he became entirely blind in that eye, two years after the trouble began. Has never had pain, injury, nor inflammation in the eye. At Wills Eye Hospital, which institution he visited at that time, one of the surgeons informed him that he had a cataract and advised operation for its removal, but the patient did not consent on account of the excellent vision which he enjoyed with the other eye.

The blind eye remained in the same condition, so far as the patient knows, until five years ago, when he observed a slight improvement. The sight continued to improve slowly, so that he was again able to distinguish large objects, the entire course being unattended with any pain.

PRESENT CONDITION. — Eye of normal appearance externally; pupil round and reacts to light and convergence. Iris markedly tremulous with the movements of the eyeball. Fundus reflex of normal intensity throughout the region of the pupil, except at the upper part where it is concealed by a dense gray membranous opacity. Closer examination shows that this membrane is freely movable, the lower extremity floating behind the iris, the upper portion being attached above. The membrane is evidently the remains of the capsule of the lens. There were a few small opacities in the vitreous, the rapidity of

[1] Read before the Philadelphia County Medical Society, March 14, 1894.

their movements proving that structure to have become fluid. The fundus was distinctly visible in all its details, and could be seen with a convex lens (+ 11). The nerve is decidedly pale and presents a shallow cup; the vessels are narrow and fewer than in health. The nerve is evidently atrophic. With + 11 the vision equals $^{12}/_{cc}$. The organ in its present condition presents exactly the appearance of an eye operated upon successfully by discission.

The best attainable vision with the correcting lens is low, but this is due to disease (atrophy) of the optic nerve and not to opacity of the media. Low as is the vision, if the case had been operated upon the result would still have been counted a success.

The interest in this case attaches chiefly to two points: 1. Complete absorption of the lens, together with its nucleus; occuring in a subject of the age of this patient; and 2. That this process should have gone on to completion without the supervention of glaucoma. Dislocation of an opaque lens is met with not infrequently, but the organ is found unaltered, at least as to the nucleus, years after the luxation has occurred, its presence in the anterior chamber causing repeated and destructive attacks of inflammation from the increase of tension to which it gives rise.

Absorption is, of course, the rule in the youthful eye when the fluid of the anterior chamber is permitted to gain access to the substance of the lens proper—a fact which is taken advantage of in the operation of discission. The infrequency of this occurrence in the adult eye is shown by the unsuccessful attempts of Beer to apply the same procedure to such eyes before the indications for the operation had been established; of twenty.nine eyes subjected to the operation, success was attained in only a single case.

The possibility of rupture of the zonula is greater where the lens has become opaque, because this structure participates in the degenerative changes which the whole lens system undergoes; and the more advanced these changes the greater likelihood of such an occurrence, as in hypermature cataract with considerable shrinking and atrophy of the organ. Such shrinking of itself exerts traction upon the suspensory ligament, and such traction may well be partial and affect one portion of the circumference more than the rest, which yields at that point; in the case reported this point was situated at the inferior attachment.

The fluid condition of the vitreous noted was probably an important factor in bringing about the result; this condition may very likely have existed prior to the lesion of the suspensory liagment, the lens having lost some of the support posteriorly and normally furnished by the contents of the vitreous chamber in consequence of the alteration in that structure.

The text-books refer to dislocation of the lens as a late event in the history of cataract. Thus Fuchs observes: "The shrinking of the hypermature cataract affects not only its thickness, but also its equatorial diameter. In proportion as the latter diminishes in size, the zonula of Zinn is stretched, and thereupon undergoes a corresponding atrophy of its fibres. Consequently, the attachment of the lens becomes imperfect. Spontaneous luxation of the lens may take place through partial or total rupture of the zonula, * * *" Again, after remarking "that spontaneous restoration of sight is extremely rare in senile cataract with a hard nucleus," he admits the possibility of such occurrence in three ways: By the resorption in the exceptional cases not only of the cortex, but also of the nucleus to such an extent that nothing but slight opacities remain. The other possibilities to which he refers are the formation of a Morgagnian cataract and spontaneous dislocation of the lens, but without absorption.

Soelberg Wells speaks of dislocation due to gradual relaxation or elongation of suspensory ligament, or its partial rupture. In such a condition, he adds, a very slight shock to the eye, which may have been unnoticed by the patient, will produce dislocation of the lens.

Berry (*Diseases of the Eye*, p. 100) speaks as follows: "After the condition of maturity has existed for a longer or for a shorter time, further changes may take place, which are characterized as stages of hypermaturity. The opaque cortical substance may to some extent shrivel from loss of fluid, and in this way a little of the sight—as a rule, only a very little—be regained."

The gradual improvement of the vision raises the question whether the lens was actually dislocated or whether the rupture extended into the anterior capsule, giving access to the aqueous humor, causing gradual absorption of that organ as in the operative procedure of discission, or whether the improvement can be explained by the solution of the opaque lens after dislocation into the anterior chamber. The latter is the position usually occupied by the lens after luxation.

Perhaps the gradual improvement observed by the patient depended upon a partial displacement of the opacity. This cannot be determined with certainty; the patient did not come under observation until the process, whatever its exact nature may have been, had gone on to completion. In any event complete absorption of the lens in the adult is a rare termination of cataract.—*Med. and Surg. Rep.*

PERSISTENT PUPILLARY MEMBRANE ASSOCIATED WITH ATROPHY OF CHOROID AND OPTIC NERVE.

BY S. LATIMER PHILIPPS, M.D., SAVANNAH, GA.

While to the anatomist and clinician the congenital defects of the human organism are extremely interesting, to the possessor they are not so agreeable, particularly as, in the majority of cases, they are incurable.

As all of the organs of the human body are exposed to these defects more or less, the eyes naturally come in for their share. These are made the more interesting from the latter-day anatomical and microscopical examinations.

In Germany such men as Manz, Deutschmann, C. Hess, Schweigger, Vossius, etc., have written most instructively upon this subject during recent years.

Of this class of congenital troubles none is more interesting than that peculiar condition known as persistent pupillary membrane. It may take any form, from a thin cord across pupil, to complete occlusion of same. Recently a case of the former came under my observation, which I deem of sufficient interest to report. It is rather rare that we find these defects, and then generally by accident. Most of the textbooks pass this subject over without a word, but a few such as Noyes[1], Galezowski[2], Fuchs[3], Schmidt-Rimpler[4], give it a mere mention.

My case was that of a man, thirty-three years of age, who had consulted me for some throat trouble, and who incidentally mentioned that his vision in the left eye was very poor. He was a splendidly developed man, in every way, save that defect of the eye.

---

[1] Diseases of the Eye.

[2] Traitè des Maladies des Yeux.

[3] Lehrbuch der Augenheilkunde.

[4] Augenheilkunde und Ophthalmoskopie.

His weight was one hundred and eighty pounds, with height of six feet. Irides gray. On superficial examination I could detect nothing wrong about the eye. Since his earliest remembrance vision has been bad in the left eye, and being aware of this he never had his eyes examined before, taking it as a matter of course. R. V.=$^{20}/_{\text{xx}}$ L.=$^{20}/_{\text{c}}$, with the left eye he can read J. No. 12 with difficulty. On throwing light into pupil with the ophthalmoscope, I noticed a thin dark line running diagonally across the pupil which at first looked like a striation in the lens. On a more careful inspection this proved to be a thin thread inserted into the iris, just beyond the edge of the pupil, in the lesser iridic circle. The temporal attachment being just above the equatorial line, the nasal being about the middle and lower quadrant of iris. The anterior chamber was normal in depth; the iris in its position. The pupil responded to light as any ordinary pupil would. It readily dilated under the influence of a 4 per cent sol. of cocaine, being perfectly round with no attachment to the capsule of the lens, or any irregularities whatever. The thread seemed to be elastic, and as the pupil dilated, it seemed to stretch and become thinner. There was no other evidence of a membrane in the pupil. On looking at the fundus I found quite an extensive spot of central choroidal atrophy, with atrophy of the upper third of the papilla. Otherwise the fundus was normal. The atrophy of the choroid and optic nerve might have been coincident with, or independent of the pupillar membrane, but the fact that he had never had iritis or any inflammatory condition of the eye in his remembrance would lead us to believe that this was congenital also.

Some times the thread becomes attached to the posterior layer of the cornea, as in a case of much interest, reported by Prof. Vossius of Giesen[5]. A twelve year old boy suffering with blepharitis, phlyctens and pannus of a scrofulous nature was brought to his clinic, where he remained under observation and treatment for many weeks.

He had intense photophobia, diffuse clouding of the cornea with vascularization and roughening of the epithelium, but no loss of substance. After clearing up of the cornea, in its deeper layers, at the center, was noticed a circumscribed, round, grayish white clouding, the size of a small pinhead, to which was attached the iris by a thin tense, long, gray brown thread. It had its origin in the tissue of the iris near the pupillary margin. The depth of the outer chamber was normal and the color of the iris unchanged. The iris was in its natural position, and not drawn toward the cornea at all by the synechia. The pupil was round with good reaction and could be fully expanded by atropia, showing no adhesions between capsule and iris; in fact there was absence of all signs of the synechia having been the sequel of an iritis or perforating ulcer of the cornea. By the examination with the Zehender-Westien loop the gray-brown thread was found to consist of three small, short threads which sprung out of the iris tissue in the region of the lesser circle, these little threads united themselves into a roundish gray tubercle, from which again sprung two very fine 2 to 3 m. long threads, which were inserted into the gray corneal cloud mentioned above. Without the loop these appeared as one cord.

Samelson[1] reports a case somewhat similar, a young girl twenty years old, having some seventeen to eighteen of these threads joining the iris to cornea.

In looking for the cause of these malformations, it is impossible to say whether they are due to some inflammatory condition during the uterine life analogous to those we find after birth, or to some unknown influence working during embryonic life, though often the latter would seem to be the more reasonable.—*Atlanta Medical and Surgical Journal.*

---

[5] Zur Kasuistik der Angeborenen Anomalien des Auges; Beitrage Zur Augenhfilkunde, ix. Heft, S. 9.

REVIEWS.

A TEXT-BOOK ON DISEASES OF THE EYE. By HENRY D. NOYES, A.M., M.D. Complete in one octavo volume of 816 pages, profusely illustrated with 269 wood-engravings in the text, five chromo-lithographic plates, and ten plates black and colors. Second Revised Edition. Price, cloth $6.00; leather, $7.00. New York: William Wood & Company. St. Louis: J. H. Chambers & Co., 914 Locust Street.

Among the many new text-books on diseases of the eye which have of late appeared, this is undoubtedly one of the best. It combines a thorough knowledge of the vast ophthalmological literature with an equally large personal experience. We had occasion to bestow a similar praise on the first edition of this work and we can only add, that this, the second edition, is still more highly to be recommended.

ANOMALIES OF REFRACTION AND OF THE MUSCLES OF THE EYE. By F. B. TIFFANY, M,D., Professor of Ophthalmology and Otology in the University Medical College of Kansas City, etc. Author's Edition. 1894. Kansas City: Hudson-Kimberley Publishing Co. St. Louis: J. H. Chambers & Co., 914 Locust Street.

This book contains, besides pictures of Helmholtz, Donders and Landolt, 187 illustrations and a number of plates. It gives a clear account of the subjects it treats on. To the impartial reader the almost total absence of reference to the literature in this department and the resulting apparent originality of the author, when he simply details the results of researches of others, are rather astonishing. Aside from this the book is worth reading. ALT.

OBITUARY.

ANTONIO QUAGLINO †.

Doctor Antonio Quaglino, Professor of Ophthalmology and one of the best in our specialty, died a short time ago, at the age of 76 years.

He studied medicine at the University of Pavia, and from 1833 to 1845 he was assistant to Professor Flarer. Afterwards he settled in Milan, and in 1854 he was made director of the ophthalmic wards in the hospital of that city. In 1859 he published the first ophthalmoscopic atlas, which has appeared in Italy; and in 1860 he was called to the chair of ophthalmology in the Faculty of Pavia. His publications are numerous. Among them we cite his treatise: *On the amauroses of ganglionic and encephalo-spinal origin* (1861); and his translation of the celebrated book by Donders: *On the anomalies of the refraction and accommodation of the human eye* (1866). In 1876 he invented the operation of sclerotomy for curing glaucoma. Nine years previously he had been one of the warm partisans of the use of the calabar-bean in this affection.

Quaglino advocated the use of injections of calomel into the temple in syphilitic affections of the eye and in 1872 at the Congress in London, he warmly recommended the cauterization of the lachrymal sac in the treatment of the grave forms of dakryocystitis.

We see, that Quaglino's conceptions were correct and that his ideas, altered by the modifications which progress always brings about, have actually become the current ones.

In 1891 he founded the *Annali di Ottalmologia*, a journal which is now very prosperous in the hands of Rampoldi and Guaita.

In 1880 he was elected its President by the International Congress convening in Milan. For three years he was the Dean of the Medical Faculty of Pavia, and he was a corresponding member of the scientific and literary Institute of Lombardy and of the medico-chirurgical Academies of Turino, Palermo and Ferrara.—*Annales d'oculistique.*

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. JUNE, 1894. NO. 6.

ORIGINAL ARTICLES.

FOREIGN BODIES IN THE ORBITAL CAVITY.[1]

BY WALTER B. JOHNSON, M.D., PATERSON, N. J.

The cases of foreign bodies in the orbital cavity herewith reported, are of interest because of the very considerable size of the bodies themselves, the demonstrated ability of the orbital contents to withstand the ravages of the inflammatory processes induced by their continued presence, and the comparatively satisfactory results attained, except in case No. 2 which terminated in death as a result of suppurative meningitis induced by perforation of the right anterior lobe of the cerebrum.

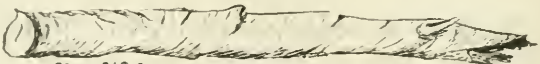
The size of at least one of the other foreign bodies, *i. e.*, case No. 1, would seem to indicate the certainty of its having penetrated the cerebral cavity although there was no evidence of any inflammatory process having occurred as a result, and no method of determining its exact course.

CASE NO. 1.—C. B., age 14, 1886. The patient applied for treatment at the Paterson Eye and Ear Infirmary stating that one week previous to his present visit he fell from a cherry three while picking cherries, striking the left side of his face upon a number of dead cherry branches receiving several lacerated wounds about the forehead and nose and a punctured wound of the left upper eye lid. A physician of the City of Passaic, at which place the accident occurred, was called and sutured the wound in the lid. He suffered great pain during the night and the eye, which commenced to swell immediately after the injury, became still more prominent. The day following the injury he called upon Dr. H. D. Withers, of Paterson, N. J., who resorted to antiphlogistic treatment which had no beneficial effect, the exophthalmos continuing to increase and the œdema of the lids continually progressing.

---

[1] Read at the Congress of American Physicians and Surgeons, Washington, 1894.

July 16. The patient was referred to the Paterson Eye and Ear Infirmary for treatment. Ether was administered, an examination disclosed a complete ptosis of the lid which was reddened and distended, considerable exophthalmos and some conjunctival chemosis, the swelling of both eyes and lids was so extensive that sufficient separation could not be made to permit satisfactory examination of the eye ball, the wound in the upper lid which was situated in the median line about midway between the margin of the lid and the eye-brow, had undergone almost perfect union, one small point only remaining open. There was no perception of light; on palpation a hard substance was discovered under the upper eye lid immediately behind the punctured wound.



Case N° 1

The edges of the wound were freely separated with the scissors and a foreign body located at a point fully one-quarter of an inch behind the outer edge of the wound. It was seized with a pair of strong forceps and removed, considerable force being necessary to dislodge it; its course seemed to be backward and somewhat downward towards the apex of the orbital cavity. Its removal was not followed by the discharge of pus.

The foreign body was a piece of dead cherry branch and was two and three quarters inches in length and one-quarter of an inch in thickness; the bark was intact, the end which penetrated the orbital cavity was broken in a sharp jagged point, the other end being almost flat.

The wound was left open and the eye dressed with cooling lotions. During the following day the pain which had been very severe subsided. The wound healed kindly and without any material suppuration; the exophthalmos, œdema and inflammation gradually diminished. There were no symptoms of cerebral affection either during the week that he carried the foreign body in his orbit or the ten days subsequent to its removal although it seemed that the foreign body must have passed backward into the orbit and probably through the sphenoidal fissure into the cerebral cavity.

July 26. Ten days after the removal of the foreign body the boy left for his home in Brooklyn and subsequently consulted Frank W. Ring, M.D., of New York, who treated him and reported his case in the New York *Medical Record* of August 13, 1887, in part as follows:

July 28. "There is complete ptosis of the lid, it is swollen, red and œdematous capable of no movement whatever. The eyeball is natural in appearance; complete paralysis of all the muscles, absolute loss of movement of the eye. Pupil slightly dilated, not susceptible to light. Vision limited to slight perception of shadows. Ophthalmoscopically there are no marked changes, blood vessels of good size, no tortuosity, slight œdema of the disc with some grayish haziness, complains of the unpleasant sensation caused by the drooping lid, no pain."

February 22, 1887. "The vision has not improved to any marked degree during the last three months. From figures at two feet he now sees $^{6}/_{cc}$. There is slight ptosis. A divergence from insufficiency of the internus not disagreeably marked. The nerve is bluish white, blood vessels of retina decreased in size. Has no pain and little discomfort from loss of vision.

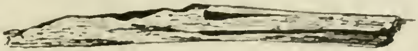
The right eye has $^{20}/_{xv}$ with H .75 D. General condition excellent."

"Several instances have occurred where larger foreign bodies than this have remained undiscovered back of the eye in the cellular tissue, and even penetrating into the brain; but I can find record of none occurring where the ultimate result of such an injury was attended with so little calamity."

CASE NO. 2.—J. P., age 49. Holland. On April 26, 1894, was brought to St. Joseph's Hospital, Paterson, N. J., from Boonton with the following history:

On the morning of this same day, he was running a circular saw when the power was suddenly increased causing a pine plank he was sawing to be shivered, sending small splinters in all directions. A piece of the plank struck him in the right eye causing several wounds of the eyelids and the conjunctiva.

April 27. On examination the upper eyelid was found to be entirely cut through about in the median line; the cut extending from the margin of the lid towards the temporal side of the eyebrow upwards and outwards one inch and a quarter; there was a vertical incision three-quarters of an inch in length across the inner canthus through the upper eyelid and entirely detaching the lower eyelid which was torn off for a distance of one inch through conjunctiva and skin, a portion of skin was also torn from the cheek below this point up to the cut over the inner canthus; the lids were œdematous although the ocular conjunctiva was not materially involved; there was a small cut in the eyeball on the nasal side about at the limbus, the pupil was widely dilated, the globe was tense, the impact of the blow having caused an extensive intraocular hæmorrhage. At a point fully half an inch behind the plane of the eyeball there was lodged a foreign body. There was no perception of light. The patient was etherized and the foreign body seized with a pair of thumb forceps and easily removed; it was a splinter of pine wood two and one-eighth inches in length and about one-quarter of an inch square. The direction was backward and upward. The eyelids were carefully sutured. Hot applications were ordered and an occasional drop of a solution of sulphate of atropia, four grains to the ounce, and an hypodermic of morphine if pain was severe. On the evening of the operation the temperature was 101°; it fell to 100° next morning and remained within one or two-fifths of this temperature for the next five days.



Case Nº2

April 30. Three days after the operation a purulent discharge appeared at the conjunctival wound, the œdema had diminished, the pain disappeared and the patient was quite comfortable; the sutures were removed and considerable union had taken place, the lower lid, however, had separated at the inner canthus.

May 3. On the afternoon of the sixth day he was allowed to sit up, but had not been out of bed fifteen minutes before he had a severe chill followed by an elevation of temperature of $104^{1}/_{5}$°.

May 4 and 5. The following two days were very restless. He was delirious and when he could talk intelligently he complained of severe headache especially in the back of his head.

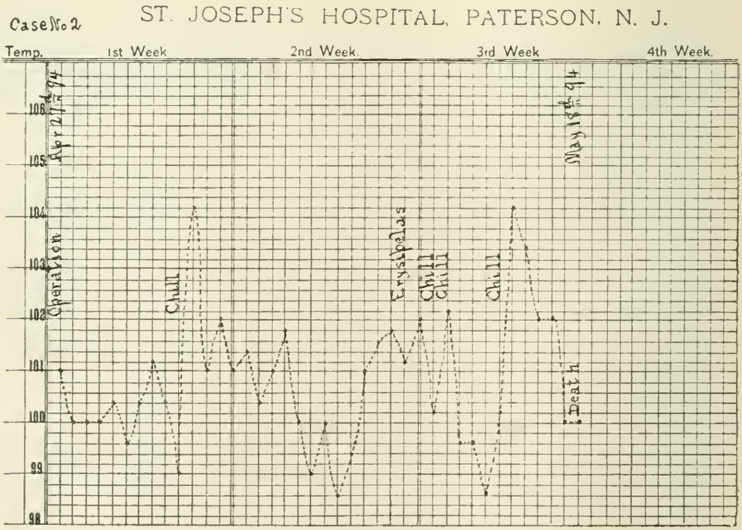
May 6, 7, 8 and 9. For the following six days after the chill his temperature ranged from 101° to 102°, during this time the œdema constantly decreased, but the headaches continued and the purulent discharge increased; the eyeball became progressively worse, suppurative choroiditis developed.

May 10 to 15. At the end of the second week erysipelas of the face extending to the head, and involving both ears, appeared. He again became delirious and remained so for the greater part of the time that the erysipelas lasted. Lead and opium wash was applied constantly. Iron and quinine was administered; he drank large quantities of milk. During the erysipelatous attack the panophthalmitis progressed very rapidly and the cornea sloughed. He had several chills during this stage; his temperature ranging around 102°; in his lucid moments he complained of excruciating pain in his head.

May 15. His temperature fell to normal, the erysipelas entirely disappeared, the delirium subsided and he became rational for twenty-four hours. The following day another chill and temperature of $104^2/_5$° induced delirium and restlessness so that he could, with difficulty, be kept in bed.

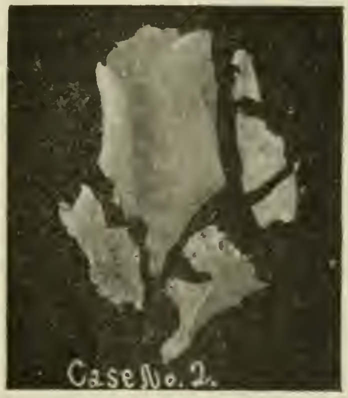
May 17. His condition was fair and the indications were favorable, but at night his restlessness returned; the cornea suppurated and the contents of the eyeball escaped. He was mildly delirious and had a constant diarrhœa.

May 18. He grew steadily worse and in the morning at 8 o'clock died, just three weeks after the foreign body was removed from the orbital cavity.



These data for the history of the case were kindly furnished by J. D. Gressim, M.D., house surgeon at the Hospital.

Autopsy eight hours after death. Rigor mortis present, the eyeball which was moderately full yesterday is flat, the contents of the globe having been discharged during the night, the œdema of the eyelids which was very well marked yesterday has entirely disappeared. The calvarium was removed, over the cerebrum under the dura mater there were extensive deposits of pus and lymph, both hemispheres being involved. The left side although opposite the injury had been the more seriously infected and contained the greater quantity of the new deposit. The vessels of the membranes were engorged especially over the occipital lobes and there were several deposits of lymph on the under surface of the dura mater, involving the dura mater, the pus deposits were upon the arachnoid, and there was some serum under the archnoid, but no purulent or lymphoid deposit had occurred there. There was no deposit of lymph or pus at the base of the brain except at the point of perforation. The right frontal lobe on its orbital surface had been perforated by the foreign body and had undergone inflammation, softening and disintegration.



Case No. 2.

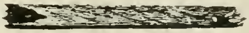
The orbital plate of the frontal bone was fractured and was displaced, the fracture which was very extensive extended from a point on a line with and one-half inch to the right of the crista galli outward three-eighths of an inch and backward to one and one-half inches to and involving the sphenoidal fissure and the optic foramen extending through the lesser wing of the sphenoid bone and along the articulation of the orbital plate of the frontal bone with the cribriform plate of the ethmoid. The edges of the fracture were separated about one-quarter of an inch at the point at which the foreign body penetrated the cerebral cavity which was about midway between the point at which the line of fracture began and the sphenoidal fissure.

The brain substance was normal and had apparently undergone no inflammatory action except at the point of injury where the softening and disintegration had occurred; this softening involved the brain substance for a space equal to the size of a silver dollar and extended into it for about one-half inch, beyond which point the brain tissue seemed perfectly healthy. The fluid in the ventricular cavities was slightly turbid but there was no apparent distention or congestion.

CASE NO. 3.—O. L., age 7; German, December 26, 1886. The patient, a strong well nourished boy, applied at the Paterson Eye and Ear Infirmimary for treatment, and stated that two days previous to his present visit while running he fell upon a piece of stick which he was carrying in his hand, and that a large splinter had penetrated the eye lid. A neighboring woman removed the splinter and in pulling it out was obliged to use great force.

When his mother, who was out at work, reached home she found him suffering great pain and there was excessive tumefaction of the eyelid which progressed continuously and was accompanied by increased pain which was so severe that he was unable to sleep. The patient was very weak and dizzy and vomited several times during the afternoon and evening. The day after the injury the pain and swelling had increased, the vomiting and dizziness had subsided. He was then brought to the Infirmary.

December 26. On examination of the right eye a small scab about one-eighth of an inch in diameter indicated the point at which the punctured wound was located, which was in the upper eyelid about one-quarter of an inch from the median line and nearer the eye brow than the margin of the lid. There was some exophthalmos, sub-conjunctival ecchymosis and chemosis of the ocular conjunctiva especially at the upper and outer side in the vicinity of the wound. The eyelids were swollen and œdematous, the upper lid being inflamed, reddened and very tense. On forcible palpation a foreign body was located deep in behind the point of the puncture. There was slight perception of light. The pupil was dilated and fixed. The pain was so severe and the lids so difficult to separate that a satisfactory ophthalmoscopic examination could not be made. There was complete ptosis and the movements of the eyeball were very limited, especially outward and upward. Ether was administered, the small scab was removed and a slight purulent discharge oozed from the wound. The foreign body was located, it was situated fully one-half inch behind the edge of the wound. The eye lid was incised from the wound outward and inward and the foreign body seized by a pair of strong thumb forceps. It was easily removed. There was no discharge of pus from the deeper part of the wound. The course of the foreign body was almost directly backward. It was a piece of pine wood one and one-quarter inches in length and about one-eighth inch in thickness; it was about square.


Case N°3

There was no subsequent discharge from the wound which healed kindly. The pain rapidly subsided. All of the inflammatory symptoms continuously improved. At the end of three weeks the eye had entirely resumed its normal appearance and the muscles regained their full strength. The vision had steadily improved and was $^{20}/_{xxx}$ in the affected eye.

July 21, 1891. Nearly two years after the injury he was again examined; there was no difference in the appearance of the eyes except a slight scar on the right upper lid and the vision was $^{20}/_{xv}$ each.

CASE NO. 4.—W. M., age 36, U.S., 1888. Applied for treatment at the Paterson General Hospital stating that while engaged in firing salutes for a political procession the cannon was prematurely discharge by the concussion of the ramrod and he received an injury.

On examination thirteen hours after the accident the face was found to be literally filled with cannon powder, dry grass and stubble, with which the cannon had been wadded. He had an extensive scalp wound and a lacerated wound of the hand, the little finger was torn away. The eyelids were swollen and perforated by bits of the stems of weeds and grass; in the right eye some of the foreign bodies had penetrated the eye ball; in the left eye a number of large pieces of the stems of weeds had passed into the orbital cavity on the nasal and temporal side of the globe, the eyeball itself having escaped serious external injury although there were many more pieces of grass and weeds than in the right side, three or four grains of powder were impacted in the cornea and two grains passed entirely through it and were lodged in the iris. The pupil was dilated widely and not responsive to light; he had no perception of light in either eye.

September 5. The patient was ætherized and dozens of pieces of dried weeds, powder, grass, and stubble were removed varying in size from the thinnest blade of grass to the stems of of weeds and stubble nearly one-eighth of an inch thick and in some cases fully one inch in length.

The right eyeball collapsed upon the removal of the penetrating foreign body, which had torn a ragged wound through the cornea, destroyed the lens, and entered the cavity of the vitreous. The efforts at the removal of the foreign bodies were continued until every thing except some of the powder grains were removed. Active antiphlogistic treatment was ordered.

September 6. Following the operation which was very tedious there was a decided increase in the œdema of the lids, and in the conjunctival chemosis which increased until the fourth day, when the inflammation which was especially marked in the right eye became more severe. Panophthalmitis developed, enucleation seemed absolutely necessary.

September 11. The inflammatory symptoms have somewhat abated, an enucleation was postponed, the pain and œdema commences to diminish.

September 15. The patient has steadily improved; he is now able to see shadows with his left eye, the pupil is still dilated, the vision in the right eye is entirely destroyed, the tension is greatly diminished, and there is commencing phthisis bulbi.

Ophthalmoscopic examination was not satisfactory in consequence of the cloudiness of the vitreous; and extensive subretinal hæmorrhage seemed to have occurred. The subsequent course of the disease was uneventful, the symptoms gradually dissappeared.

September 29. He was allowed to return home, his vision being about $^6/_{cc}$. From this time his improvement has been very slow, but positive until the present time.

Present condition, May, 1894. The right eye has developed phthisis bulbi, the cornea is partially destroyed and the eyeball sunken and irregular; there are several cicatricial contractions, he has never had any pain since the subsidence of the original inflammation. The left eye has a large symblepharon on the temporal side of the globe resulting from conjunctival contraction. The eye ball is discolored by powder stains, the pupil reacts promptly to light.

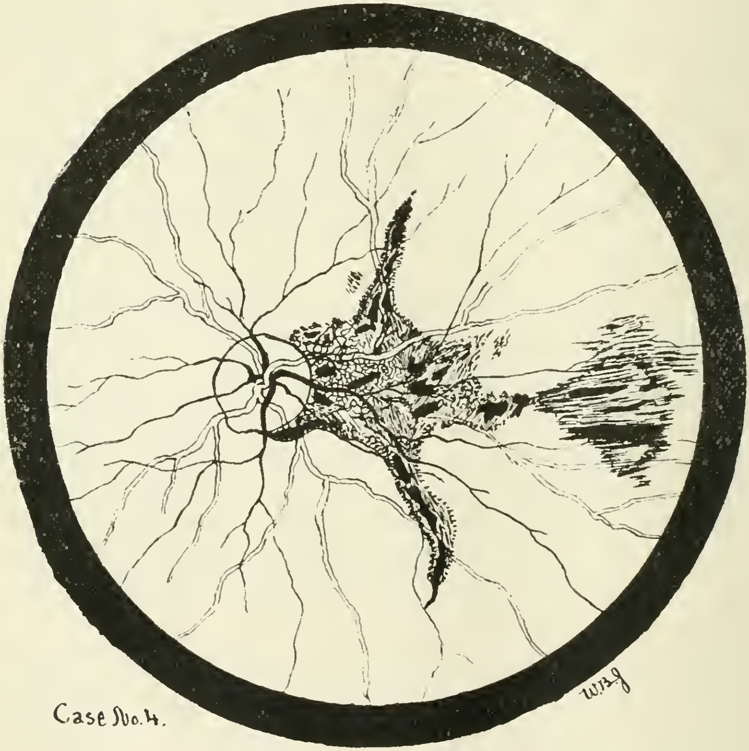
Ophthalmoscopic examination reveals an extensive rupture of the choroid which is situated on the temporal side of the optic nerve entrance and extends to the extreme limit of the field as depicted in the accompanying cut.

The character of the rupture would seem to indicate that it was partially the result of direct violence upon the peripheral portion of the injured choroid, and partly the result of contrecoup on the part of the choroid near the nerve entrance, at these points there seem to exist two separate and almost distinct ruptures; the concussion from the cannon added to the force of the foreign bodies striking the eyeball must have been very great.

R. V.=0.

L. V.$=^{10}/_{cc}$.

He has a sensation of light in the left eye which constantly flitters before the eye night and day and can be seen even when the eye is closed. He describes this light as a black center surrounded by moving light, which is no doubt due to the blind spot in the field of vision caused by the choroidal rupture. He was for some time after the injury troubled with rainbow light flashes, which would circle around and then burst, as time passes he sees less of these and he thinks his vision has steadily but very slowly improved. He has at pre-



Case No. 4.

sent no discomfort except the inability too see. He used to suffer from photophobia, but it has now entirely subsided. He is and has been constantly employed as night watchman. There has been no change in the objective or subjective symptoms observed at any examination which has been made during the past two years.

DISCUSSION ON FOREIGN BODIES IN THE ORBITAL CAVITY.

DR. H. KNAPP of New York.—Mr. President: Foreign bodies in the orbit are sometimes very difficult to deal with both as to the diagnosis and treatment. A few months ago I was called by a surgeon to see in consultation a boy who had been wounded by a No. 22 birdshot, which had entered the upper inner corner of the orbit. The eye did not move upwards and the upper part of the orbit was hard, evidently filled with blood. As we could not locate the body we agreed that the most advisable course to pursue was to wait. This course was followed and the boy who had had complete ptosis recovered the mobility of his eye to a certain degree. When I first saw the patient, immediately after the injury, there was a good deal of blood in the interior of the eye, in the inner upper part, the retina was raised, apparently detached; lower down I could not see the fundus clearly. I thought that this was simply owing to the foreign body having struck the eye on the posterior part outside and having produced hæmorrhage inside. Now the interior of the eye has cleared up. In the inner upper part there is a long scar about five or six diameters of the optic disk and around it a good deal of black pigment. Below the optic disk there is a hemispherical elevation of two disk diameters in breadth and three in length. Its crest is seen sharply with strong convex lenses. The retina covers this foreign body without any movement and the surface of the elevation is slightly striated and grayish white. From all this I could only conclude that the bullet had not merely struck the sclerotic but had pierced it, entered the eye and is now fastened at the background in the lower part causing no irritation.

The fourth case mentioned by Dr. Johnson reminded me of this case.

DR. W. B. JOHNSON of Paterson, N. J.—Mr. President: I remember a case somewhat similar to the case mentioned by Dr. Knapp in which a shot from a shotgun—birdshot—passed entirely through the eyeball. I think I reported that case with some thirteen or fourteen other cases in Milwaukee last year, under the title of "Quiescent Foreign Bodies." That birdshot, however differed from his case in that it passed entirely through the eyeball and there was a subsequent return of normal vision in that eye, although the shot passed just without the limbus in the ciliary region and the point of location at which the shot passed out of the eye could also be demonstrated in the fundus by ophthalmoscopic examination, it became a foreign body in the orbit and became encysted there I suppose. There was no further trouble and the vision became normal. I think these cases of foreign bodies in the orbital cavity are very interesting, fortunately we do not see very many of them and I think it is a very good thing that we do not, although the orbital contents certainly in a great many instances are able to withstand a great deal of injury and come out of it in very good condition.

Case No. 2, however, in which the foreign body penetrated the cerebral cavity, was very serious. In the reported cases of foreign body in the orbit which came to autopsy, the cerebral cavity had generally been penetrated and cerebral disease had resulted. Whether many of the other cases which recovered, although the foreign bodies were so large as to have almost certainly penetrated the cerebral cavity, really did recover after such penetration, can only be conjectured, although the indications all seem to point to the possibility of such injury occurring without fatal termination.

HEADACHES.[1]

BY O. LANDMAN, M.D., TOLEDO, OHIO.

I was led to write upon this subject to see whether there were any correspondence between the location of an headache and its cause. Again, because I felt that the nerve cells might possibly be the seat of pain, notwithstanding the evidence to the contrary.

The brain tissue may be lacerated and torn without producing any response, hence it is considered insensible. Yet, electrical stimulation of the gray matter will evoke muscular evidences of an impression having been made.

Now then, does it follow because, in the brain, any mechanical mutilation, an unnatural process, does not seem to produce pain that this would be the case if a group of nerve-cells were overworked by sensations flowing to it along a set of nerves. May they not be wearied even after the cessation of inflowing stimuli? The nature and character of the stimulus determines whether the nerve cell will respond and an electrical current may closely resemble the natural phenomenon of excitation.

The afferent nerves are the natural highways and means of transmission of energy. All of us have experienced a feeling of dull pain after excessive mental strain and we refer it deeply within and not superficially.

There is the quality of irritability possessed by simple protoplasm which makes it respond to an external stimulus, but this irritability is presumably independent of any special nervous elements. The property is an inherent quality.

We must endeavor to adduce evidence to prove that a nerve cell feels and hence possesses sensation. Although we can not believe that irritability is a sign of pure sensation yet there are some peculiar evidences that would point to this. Thus in the plant called Mimosa Pudica during the day the leaflets fall into a horizontal position with their surfaces flat, and toward night two opposite leaves lie with their upper surfaces in coaptation and vertical. Stroking the under surfaces of the leaves produces the same movements but this does not follow upon irritation of the upper surfaces.

---

[1] Read before the Toledo Medical Association.

Again, in the Venus fly-trap the two parts of the leaf are at right angles to each other and adorned with bristles; the slightest touch to these induces a closure of the leaf. These phenomena are due to cell imbibition of fluids. There must be, however, some initiative force and a responsive substance.

Mills, in "An American Text-Book of the Diseases of Children," in an article entitled, "Headaches," says: "Nerve end-organs, which are an *essential* portion of the apparatus of sensibility are wanting in the brain itself."

I think that this is negatived by the fact that when a nerve be laid bare and the central end be stimulated, if it be affected by a current, the result is pain.

(Martin). "Perfectly characteristic sensations can be felt in the absence of the sense-organs through which they are normally excited. We believe that it is a center in the brain which is the most important element in determining a sensation rather than the end-organ." A very recent idea is that there are pain centers in the brain.

The general opinion is that every headache if it be within the cranium is in the dura or pia mater and in the former due to an irritation of the trigeminus and in the latter an irritation of the ganglionic sensory nerves produced by hyperæmia or anæmia. This does not explain to me how either by pressure or irritation of the sensory nerves of the membranes, headaches due to use of the brain tissue are caused. For here the hyperæmia is most probably in the vessels of the brain substance. The only way I could otherwise account for it, by the common theory, is that the fibrous tissue separating the convolutions, etc., is supplied by sensory nerves and the sensation deep within and not in the convexity. A muscle cell grows weary and exhausted by overwork then why can a nerve cell not grow tired and become conscious of its own weariness.

Even if we feel a pain in a certain part or spot is it there or only in the brain? If we believe that headaches may be in the nerve-cells or in some other structures supplied by sentient nerves then we can conveniently divide headaches into two broad classes, one central and cellular and the other non-cellular. This division is not based upon the cause.

I have not infrequently heard it stated and seen it written that headaches on the vertex in women were due to a uterine or ovarian reflex. This is not so true as I used to believe, for about twenty per cent. of the cases which I have tabulated show that the eyes were the cause, since attention directed to these organs corrected and cured the headaches on the vertex.

In over two-thirds of these vertex cases the patients complained of tenderness of the scalp which always *followed* the headaches. In these kind of headaches there is not infrequently great confusion of the mind. The headaches and tenderness disappear upon correction of the refractive errors.

When the headaches are general then you must look for some other cause than the eyes.

There is a necessity for examining and closely questioning a patient who may complain of *constant* headaches. In general headaches you muct exclude hyperæmia, anæmia and blood dyscrasia; for a uric acid diathesis might induce a neuritis in the branches of the trigeminus which supply the membranes of the brain. In general headaches where the cause is obscure potass. iodide or the red iodide of mercury is the most useful therapeutic agent.

In syphilis the headaches have a general character and possess a quality which is quite a constant attendant namely, a nocturnal exacerbation, nothing but mercury with iodide relieves them permanently but chloralamid relieves them temporarily. In anæmic headaches a recumbent posture and darkness, or massage are helpful in alleviating pain.

Sick headaches are almost generally preceded by some nausea and are hemicranic in character. They can be brought to a speedy termination by administering a mild emetic and repose. Some times you will find a sick headache and ocular headaches associated when correction of any ocular defect excludes these from the case. One case under my care was cured of these sick headaches and vomiting by a correction of the refractive error. There are some headaches brought on by nervous excitement and worry, many persons work themselves into such a condition and many of these are due to an irritated state of the nerve protoplasm. In tumors of the brain as a rule the pain is indefinite as to its location but at times is in the region of direct pressure, and in fact external pressure, over the point of its location will cause more pain. In nasal reflexes the pains are more at the bridge of the nose and inner, upper and parts of the orbits.

From our experience we believe that most constant headaches arise from some ocular defects and hence we feel justified in dwelling at greater length upon the symptoms and characters of such cases.

In albuminuria you very often have a brow-ache. The observations were made upon some two hundred cases which the final histories have been obtained as nearly as possible.

There were more females than males. They were usually persons who used their eyes a great deal and had sedentary habits. They were generally cases who had had their general bad states corrected before I examined them. When a person comes to a physician complaining of constant headache, the first thing to determine is whether it can be localized. If not then as a rule there is some general cause. If they say that they have a headache in their eyes, or if they describe a sensation as if a pain ran directly backward in a horizontal line to the occiput, again if the patient complains of pain around the eyes after use, or back of eye, or a throbbing or pain that is worse evenings, or if rest relieves this pain then probably the eyes are the cause. I grant you that in such cases the pain is in the sensory nerves. We must admit authority and acknowledge that such has said that a deficient muscular balance induces headache. Yet, in my opinion it is far more frequently an error of refraction and consequent strain thrown upon the ciliary muscle. The ocular nerves have their deep origin in the medulla and very frequently we have occipital headaches which I believe are central and in the nerve cells. In optic neuritis there is pain in the top of the head.

The regions in which headaches, due to eye strain, are found in the order of their frequency are as follows:

	PER CENT.
Supraciliary, - - - - -	41.
Vertex, - - - - - -	20.
Occipito-frontal, - - - - -	8.
Occipital, - - - - - -	12.
Temporal, - - - - - -	8.

Once out of 200 cases a general headache. Frontal-vertex, vertex and occiput, thirteen times. Five fronto-occipito-vertex. The clavus hystericus may often be cured by properly adjusted glasses. When there was severe occipital headache the patients complained often of a stiffness and soreness of the muscles at the neck. The cases that had occipito-vertex headaches were the ones that most often complained of tenderness of the scalp. Any thing that tends to improve the general muscular tone adds so much to the cure of the case. In some of my cases after the patients physical condition improved much, the glasses were laid aside and the headaches disappeared. In such cases the glasses were useful in bridging over a period of muscular weakness.

The discussion of headaches of infective fevers, etc., has been been purposely omitted in this paper.

OCULAR GYMNASTICS.

BY C. M. HOBBY, M.D., IOWA CITY, IOWA.

In these days of equilibrating muscles, anything that looks towards developing the strength of weak muscles, rather than diminishing that of strong ones, appeals to our judgment as likely to be more satisfactory in the end. Amongst these expedients the "rhythmic exercise," of Dr. Savage rightly meets with favor although it seems to be unnecessarily complicated with prisms, to suit theories rather than conditions. It is evident that it is impossible to make a prism take the place of the dumb-bell in muscular exercise, for the resistance of the prism is to *co-ordination* not to contraction.

The writer has for many years used muscular exercise and training in the treatment of strabismus, and has lately applied the same methods to the treatment of heterophoria with satisfactory results. The system employed, if anything so simple can be called a system, is to produce successive contractions of the muscle to be exercised, for a time short of extreme fatigue, from 30 to 100 contractions at first, increasing the number in accordance with the ability of the patient to bear the work.

Taking the right external rectus for example, with the left eye covered, the patient is directed to look at an object at a moderate distance (from 15 to 25 feet), 2. then without moving the head, to look at an object 20° to the right, then back at the first object and repeat, increasing the angle as it may be borne; the same method can be applied to any muscle selected, or to group effects.

Exercise of the ciliary muscle can be secured in a similar way, by requiring the patient to look at a distant object then at one close by, using small objects and being careful to secure accommodation each time before changing. Exercise in co-ordination can be obtained by using both eyes first on a distant object then on a near one, using the same care to secure perfect accommodation before change, and repeating the changes as frequently as perfect accommodation will allow. Co-ordination can be practiced at differ distances and angles, and it is well for the patient to wear full correction of any refractive error while practicing accommodation or co-ordination, for it is better that he accustom himself to movements that are of use to him, rather than to train his muscles for work that they will not be required to perform.

This method of muscle training is very simple, requires no apparatus, and will accomplish all that is claimed in behalf of the so-called "rhythmic exercise," with prisms; and the writer believes that it will overcome any heterophoria that is not of degenerative origin.

CORRESPONDENCE.

Editor AMERICAN JOURNAL OF OPHTHALMOLOGY.—I notice an error in my article on "Albuminuric Retinitis in Pregnancy," in the May, 1894, number of your journal. It occurs in the fifth line on page 134. The words "albuminuric retinis" should read "*uræmic chemosis.*" The ocular conjunctivæ in this case were chemotic but the right worse than the left. The right conjunctiva showed a spot about the size of a gold dollar where the vessels were greatly injected and over which there was an intense itching. A slight amount of mucous was thrown off at this spot. Cocaine was used and the redness disappeared in a few days.

I have carefully examined ophthalmic literature on this subject and find only two cases that are in any way similar to this. One is reported by Swan M. Burnett, M.D., in the *Archives of Ophthalmology and Otology*, Vol. IX. This case occurred in pneumonia and he attributes it to vaso-motor disturbance, and adds that disturbances of the fifth nerve may cause it.

S. Pollack, M.D., in the AMERICAN JOURNAL OF OPHTHALMOLOGY, for May, 1893, repo.ts a case of "Albuminuric Ophthalmia." In this case the entire eye suffered, the conjunctivæ being very chemotic; also iritis and neuro-retinitis. In my case there was no iritis, the pupils dilating perfectly throughout. The chemosis disappeared after labor.

L. R. CULBERTSON, M.D.

NEWS.

At the meeting of the California State Medical Society held in San José, April 17, 18 and 19, 1894, Dr. Barkan on behalf of the Society of Eye, Ear, Nose and Throat specialists, presented the following proposed law and the desirability of having it passed, saying that the document had been signed by nearly all the oculists. "The law which we should like to have endorsed by the State Medical Society and recommended to the proper committee on legislation for enactment at the next session of the Legislature is an exact copy of the law which has passed several State Legislatures in the East:

"The people of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1.—When one or both eyes of an infant become inflamed or swollen, or reddened, at any time within two weeks after its birth it shall be the duty of the midwife or nurse having charge of such infant, to report in writing within six hours to the Health Officer, or to some local official of the city, town or district in which the parents of the infant reside the fact of of such inflammation, swelling or redness of the eyes of the child.

"SECTION 2.—Any failure to comply with the provisions of this act shall be punished by a fine not to exceed two hundred dollars, or imprisonment not to exceed six months, or both."

The matter was referred to the Executive Committee.—*Pacific Medical Journal.*

SELECTIONS.

THE CAUSATION OF TRANSIENT INCREASE IN THE REFRACTION OF THE EYE DURING IRITIS; WITH REPORT OF A CASE.

BY JOHN T. CARPENTER, JR., M.D.

Adjunct Professor of Diseases of the Eye in the Philadelphia Polyclinic; Assistant Surgeon to Wills Eye Hospital.

Only a few years since, in a paper read before the American Ophthalmological Society, Dr. John Green called attention to the fact that in iritis there is often a "Transient Myopia" developed. He studied the symptom first in his own case, and afterward noted it in many of his patients suffering from iritic inflammation.

In 1888, Dr. Mittendorf brought before the same society, some observations upon what he termed "Symptomatic Myopia." He claimed as the cause of this condition "an advancement of the lenticular system toward the cornea, either by an increase of the contents of the vitreous chamber, or by a swelling of the lens itself" (cataract). He stated, furthermore, "that the infiltration into the vitreous must be in the shape of clear serous exudation, interfering but little with the clearness of the vitreous humor." Among the ocular diseases in which this symptomatic condition may arise, he mentioned glaucoma, serous choroiditis and iritis. Traumatism may also cause it. In the *Transactions of the American Oph. Soc.* for 1892, and as a result of these papers, Oliver published in a most excellent article some valuable clinical points as to the result of careful investigation on a series of cases of iritis, in which he found increase in the refractive power of the eye.

There seems to me to be no satisfactory reason to seek for the cause of the so-called "symptomatic myopia" in the advancement of the lenticular system toward the cornea as a result of vitreous infiltration. A much less complicated and far more satisfactory explanation is to be had in the presence of a strong, unyielding, tonic spasm of the ciliary muscle, which produces a condition of "spastic accomodation" (Koller). A very common occurrence in our clinics at the large hospitals, in cases of traumatism, (which has been included among the conditions in which "Transient Myopia" is observed) is a tonic miosis—the pupil being contracted to pin-point and remaining absolutely immovable to changes of light and shade, as well as to the mydriatic action of cocaine or even atropine, for a limited period of time. The most simple as well as the most satisfactory explanation in that class of cases in which the refractive power of the eye is increased after a traumatism, would seem to be tonic ciliary spasm coincident with the contraction of the circular fibers of the iris.

In these cases of iritis—the report of one of which forms part of this article—in which a transient myopia develops, or an existing permanent myopia is increased in degree, there must be a shallow anterior chamber present, together with increased intra-ocular tension, if the true cause of the myopia is to be found in the advancement of the crystalline lens. In my case the opposite conditions were present; and yet the myopia almost doubled itself during, and for sometime after the height of the iritis.

In the discussion which followed Mittendorf's paper, the view was advanced that the myopia was due to spasm of the ciliary muscle, which opinion was refuted by the author on the ground that atropine had been instilled for several weeks and that dilatation of the pupil was complete. This objection was answered in Oliver's excellent paper above mentioned. To quote from the article, he says "in nearly every case ot iritis, even after full pupillary dilatation, especially in the plastic form of the disease, there was an even changeable, though relative increase of the refractive power." He speaks of the everyday fact that in young hypermetropes, dilatation of the pupil may be perfect, while paralysis of the ciliary muscle is far from complete. Again and again has it been necessary in my routine refractive work to order the mydriatic continued because of the failure to completely unmask a vigorous spasm of accomodation. The order of events following the instillation of atropine, as is well known, is first mydriasis, later cycloplegia; and it requires no stretching of the imagination to conclude that if dilatation of the pupil so often fails after repeated use of atropine in iritis, a ciliary muscle spasm may easily exist though the pupil dilate ad maximum. The probable cause of this very interesting refractive condition is then to be found in spastic contraction of the ciliary muscle, already inflamed in the almost inevitable involvement of the ciliary body in all forms of inflammation affecting the iris. This tonic muscle spasm does not relax in the manner usual when powerful mydriatic drugs are employed.

A practical point which I wish to urge from the study of the case I am about to detail, is never to prescribe a glass after iritis until the presence of complete paralysis of accommodation has been satisfactorily ascertained by suitable tests. In glasses ordered even as late as two weeks after all evidences of iritis have vanished, there is apt to be an over-correction of the permanent static refractive error and consequent severe discomfort to the patient at a later date.

On October 4, 1894, I was called in to see a patient supposed to be suffering from a severe conjunctivitis, The eye had been "inflamed" a week before this date and boric and zinc drops had been employed. He was suffering from neuralgic pain over the left orbit and temple which was severe enough to prevent sleep the night before. He was florid, of full habit and a subject of rheumatic gout, which, for sometime previous to his ocular disease, had been troublesome.

There was a typical iritis present in his left eye as revealed by a small pupil, and immovable iris which was slightly greenish in color and decidedly blurred in its delicate markings. The eyeball was intensely red, both conjunctival and pericorneal injection being present to an enormous degree. A thin muco-purulent secretion gave color to the diagnosis of acute conjunctivitis. The cornea was steamy and chemosis was marked. The lids were red and "puffy." The anterior chamber was deep and tension was not increased. His vision was greatly reduced, falling to fingers at fifteen feet when the right eye was covered. The case was treated energetically. Atropine, cocaine, leeching, hot applications and an antiseptic lotion comprised the local measures. The systemic treatment included free purging with Epsom Salts, salicylates and hyoscine hydrobromate gr. $^1/_{100}$ at bed time hypodermatically administered. He made a rapid and complete cure with round, perfectly dilated pupil. About two weeks after all signs of iritis had disappeared I ordered his distant and near correction which brought the sharpness of sight up to normal. He was given the following: O. D.—0.75 cy. ax. 120° $^6/_{\text{VI}}$; O. S.—1.50 $\frown\!\!\!\!\smile$—1.00 cy. ax. 45° $^6/_{\text{VI}}$? and his presbyopic correction; + 1.50 sph. added to the distance glasses.

A month and a half later he called to see me about his glasses which were causing him great pain. He stated that he could not see to read with his left lens; but preferred to close that eye. His left vision was now $^6/_{\text{IX}}$ without a glass instead of $^6/_{\text{XXIV}}$ as formerly, and careful estimation of the amount of error now present revealed the fact that his left eye was greatly overcorrected. He selected now O. S.—0.75 s. $\frown\!\!\!\!\smile$ — 0.50 cyl. ax. 45° V. = $^6/_{\text{V}}$?

The myopia had lessened one-half and the distant vision had improved to very acute normal sight with the weakened concave lens. Reading became once more easy, as binocular near-vision was no longer interfered with by the greatly overcorrected left eye.—*Philadelphia Polyclinic.*

THE TREATMENT OF MEMBRANOUS AND DIPHTHERITIC CONJUNCTIVITIS.

Although croupous inflammation and superficial diphtheritis of the conjunctiva are closely related, and although many modern writers are disinclined to maintain a distinction between these two affections, there can be little doubt that a sufficient number of each class, well marked, render the maintenance of a differentiation scientifically worthy. Croupous conjunctivitis in its pure type is uncommon and its etiology uncertain. It differs from the diphtheritic type chiefly in the fact that there is a painless swelling of the lids and a membranous exudation upon the surface of the conjunctiva, while the latter is characterized by a board-like induration of the palpebræ and an exudation within the layers of the conjunctiva which leads to death of the invaded tissues, and by pressure tends to destroy the nutrition of the cornea. One therapeutic rule, however, is applicable to both affections,—namely, that nitrate of silver, the standard application in severe catarrhal and purulent conjunctivitis, is contraindicated.

In a recent article by Valude (*Annals d' Oculistique*, February, 1894), concerning the various types of conjunctivitis associated with false membrane, this point receives especial attention. He insists that three methods of treatment, often recommended, should receive only condemnation, whether we deal with a pseudo-membranous or a true diphtheritic conjunctivitis,—namely, nitrate of silver, iced compresses, and sublimate lotion. Nitrate of silver has often been shown to be detrimental under these circumstances, cold compresses are likely to add to the depression which the cornea already feels, while sublimate can do no special good, so far as the bactericidal influence is concerned, and is, as is well known, capable of injuring the corneal epithelium.

In Valude's experience, the essential basis of the treatment consists of sprays, frequently used. These should always be warmed, and may be composed of boric acid or any non-irritant mildly antiseptic liquid. He prefers the following lotion:

Extract of opium, gr. iss:
Sterilized water, Oii;

which may easily be prepared by dropping into two pints of warm boiled water ten drops of a standard solution, composed of sterilized water and glycerin, each half a drachm, and extract of opium, fifteen grains. After experimenting with different antiseptic lotions in a large service, he has adopted this liquid, which has proved to be of the greatest advantage in soothing pain and diminishing secretion. Considerable swelling of lids may be managed by using, instead of the lotion just described, a naphtholated solution; but, as he points out, this swelling is not so frequent as in true purulent ophthalmia. In addition to irrigations with the antiseptic liquid, he advises an iodoform salve (1 to 50), to be applied twice a day to the conjunctival cul-de-sac, especially if ulcers of the cornea exist. If there is much suppuration, terpinol is recommended. Terpinol, mixed with equal parts of oil of vaseline or oil of sweet almonds, takes the place of the excipient in the iodoform salve.

Referring to the well-known recommendation of Fieuzal, to touch the false membrane in these cases with lemon-juice, Valude states that he has seen improvement occur, but is inclined to attribute it to careful irrigation rather than to any specific action of the medicament. If it is applied at all, it should be done carefully, with a camel's-hair brush dipped in a solution of the juice, by touching only the false, adhering membrane.

In connection with Valude's experiences in membranous and diphtheritic conjunctivitis, it is interesting to refer to the researches of Gilbert Surdille, elsewhere abstracted in full. He thinks that Fieuzal has rendered a real service in reviving the old remedy,—lemon-juice,—and recommends it, provided too much confidence is not placed in its virtues. Believing the affection to be a microbic disease, he is inclined to employ phenic acid in a formula composed of five drachms of glycerin and half a drachm of phenic acid. He proceeds as follows: The eyelids are reversed and the conjunctiva is washed with a jet of biniodide of mercury (1 to 20,000). The false membrane is then removed with an alkaline solution, borax or biborate of sodium, after which, with a wad of cotton dipped in the carbolic acid and glycerin solution, all the diseased areas are thoroughly anointed. In the interval he applies a salve of methyl-blue (1 to 1000), because Janicke has demonstrated that Loeffler's bacillus does not grow in bouillon containing methyl-blue, even in very minute proportions.

Surdille very properly discards bloodletting, and also, but this, we think, without good reason, the administration of mercury. In our own experience,—somewhat limited, owing to the small frequency of the affection in this country—in addition to copious irrigation with warm antiseptic solutions and the instillation of atropine, the best results followed the internal administration of quinine, iron, and mercury, the quinine in suppositories, the iron as the tincture, and the mercury either as calomel or bichloride. The last remedy, following Jacobi's recommendation, may be exhibited in milk or water hourly in the dose of $^1/_{60}$ to $^1/_{40}$ grain to children from three to six years of age. Even if the specific action of the remedy is doubted, it has an alterative and tonic influence under these circumstances which is not to be despised. To sum up: During epidemics of diphtheria, especially when the nasal mucous membrane is also affected, the conjunctiva may become inoculated, and a form of conjunctivitis develop almost certain to destroy sight unless prompt treatment is applied. This treatment should consist of copious irrigations with a warmed, mild antiseptic fluid. Boric acid fulfils the indications, and we are inclined to agree with Valude that bichloride has no advantages. Atropine drops are indicated if there is corneal ulceration, or atropine may be used used at night and eserine during the day, in the manner already several times described in these columns in connection with the ulceration occurring in ophthalmia neonatorum. Iodoform salve should be freely applied within the conjunctival cul-de-sac; indeed, vaseline itself is efficient under these circumstances. Finally, all cauterant applications, particularly nitrate of silver, should be avoided. Very hot water conserves the nutrition of the cornea, and is preferable to the cold applications which are so effectual in the early stages of a purulent ophthalmia. With the special remedies recommended by Valude and Surdille we have no experience, but they suggest trial. Lemon-juice should not be forgotten, and there is enough evidence that good his followed its use to place it among the medicaments best suited to the treatment of this affection. In spite of high authority, we have no confidence in the application of quinine or flowers of sulphur to the diseased lids.—*Therapeutic Gazette.*

A CASE OF RETINITIS PIGMENTOSA, WITH EXTREME CONTRACTION OF THE VISUAL FIELDS AND WITHOUT NIGHT-BLINDNESS.

BY F. W. MARLOW, M.D., M.R.C.S.E.,

Professor of Ophthalmology in the University of Syracuse, N. Y., etc.

Miss K. L. C., aged twenty years, was brought to me early in February, 1893, by Dr. R. J. Dimon, of Hastings, N. Y., for examination of the eyes.

She stated that her symptoms had been present from her earliest recollection. She can only see what she is looking directly at. In looking at the face of another person five or six feet distant, she sees nothing but the face, neither at the sides nor above and below. While walking she always keeps her eyes on the ground to avoid stumbling. She has no more hesitation in going about at night than in the daytime, and thinks there is no more difference between her day and night vision than is the case with other people. A dull light makes no difference in her ability to read small print.

Examination showed R. V.=$^{6}/_{\mathrm{VI}}$ partly — not improved by glasses.

L. V.=$^{6}/_{\mathrm{IX}}$ partly—0.5 D cyl. 90° improves slightly.

Reads 1 Jaeger easily.

Her ability to read small print in dull light was compared with my own in the dark room, with gradually diminished illumination, and showed no relative defect. Careful measurement of the field of vision with the perimeter showed the boundary of that of the right eye to lie between 5° and 7.5° from the fixation point in all directions, that of the left eye lying in most directions at 7.5,° in some slightly within that point. The ophthalmoscope reveals the presence of typical retinitis pigmentosa, and the deposits of pigment come within three disc-breadths of the papilla.

Her mother thinks the patient's vision unchanged from earliest childhood, but specific statements made by the patient herself leave no doubt that definite, although probably slight, contraction of the fields has taken place within the last few years.

There is nothing in the obtainable history to throw light on the nature of the causation. She had scarlet fever at five years of age, but vision was defective before then, and her mother says that she always stumbled over things on the floor. I was unable to learn of any eye trouble in the family. Consanguinity in the parents is out of court, the father being of French, the mother of Dutch-Scotch descent.

The history leaves little doubt that extreme contraction of the visual field was present very early in life, and, taking into consideration the extremely slow progress, it seems probable that the condition had its origin during the intra-uterine period of life.

No treatment was advised. I report the case chiefly on account of the entire absence of the most characteristic symptom of the disease.—*N. Y. Medical Journal.*

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. JULY, 1894. NO. 7.

ORIGINAL ARTICLES.

A CASE OF PANOPHTHALMITIS SUPPURATIVA FOLLOWING DISCISSION OF A CAPSULAR OPACITY.[1]

BY SAMUEL THEOBALD, M.D.,

Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital, and to the Baltimore Eye, Ear and Throat Charity Hospital.

Absolute asepsis in eye operations is something that we may aim at, but shall never probably completely attain. If, as has been proven, it is impossible, by any amount of scrubbing and application of germicidal agents to rid the *skin* entirely of septic organisms, it is hardly to be expected that we should meet with better success in dealing with the conjunctival sac. Indeed, in most respects, the conditions are much less favorable for obtaining asepsis of the conjunctiva than of the skin, for the antiseptic solutions which are permissible are many times weaker and the mechanical means which may be employed much less efficacious.

---

[1] A paper read before the American Ophthalmological Society at Washington, May 30, 1894.

On the other hand, it is undoubtedly true that, in some way which we do not as yet fully understand, Nature assists us in our operative work upon the eye, so that with comparatively imperfect antiseptic precautions we obtain far better results than might, *a priori*, be expected. Consider, for example, the difference in the behavior of stitches in the skin and in the conjunctiva or in the external eye muscles. In the skin, stitch abscesses are of frequent occurrences, in spite of the most rigid antiseptic measures; in the conjunctiva and eye muscles, on the other hand, even in the absence of all antiseptic precautions they are almost unknown.

It is evident that the organisms which induce suppuration do not, as a rule, find in the conjunctival sac conditions which are favorable to their development, and the comparative immunity from infection which we enjoy in our eye surgery is, in all probability, due in a greater measure to this fact than to the, at best, imperfect antiseptic measures which we all, at the present day, feel it incumbent upon us to employ.

The antiseptic precautions which I practice in all operations involving penetration of the globe, such as iridectomy, cataract extraction, discission, etc., and which were used in the case I am about to relate, I recognize, are by no means perfect, yet, for practical purposes, they seem to me to be as good as those in general vogue: the conjunctival sac is flushed repeatedly with a 1 to 8000 sublimate solution (the flushing being begun, when practicable, several hours before the time for the operation) and the lids are washed with the same solution, a pad of absorbent cotton wet with it being also applied over the closed lids. The cocaine solution contains 4% of boracic acid, and the particular solution employed for major operations is not used for any other purpose.

Just before being used, all instruments, or rather those parts of them that are likely to come in contact with the eye, such as the blades of knives, scissors, forceps, etc., are sterilized by being immersed in boiling water, and at the same time are washed clean with a bit of absorbent cotton, which has been boiled in the water, and which is held for the purpose with the fixation forceps. After being so treated, the instruments are not laid in an antiseptic solution, but are simply so placed, or held, that their sterilized parts shall not come in contact with any other object. The operator's hands are simply washed clean with warm water and soap. To cleanse the eye during and after the operation a 1 to 8000 sublimate solution is employed and a bit of new sponge or absorbent cotton.

The case of suppurative panophthalmitis following discission which I wish to bring to the notice of the Society occurred in a negro boy, Harry B., aged 14, whose physiognomy was characteristic of inherited syphilis. He had had in each eye a soft cataract, probably congenital, with attendant nystagmus. By repeated needlings, the left eye being operated upon first, and none of the operations having been attended by unusual inflammatory reaction, I had brought about the absorption of both lenses, and had restored fairly good vision (the retina being, probably, imperfectly developed) in the left eye. The relative poor vision of the right eye seemed to be dependent upon some remaining capsular opacity, and it was to get rid of this that I determined upon the needling which resulted so disastrously.

The operation was a thoroughly satisfactory one, a good rent being easily torn in the opaque membrane, without undue traction. Previous to the needling the pupil was dilated by atropia, the solution of which contained 1% of boracic acid; the eye was flushed with 1 to 8000 sublimate solution in the manner I have described, except that the flushings were begun only a short time before the operation, as the patient had just come from his home, and a solution containing 4% each of cocaine and boracic acid was instilled. The only instruments used were a speculum, which was thoroughly boiled, a cataract needle and fixation forceps. The two latter instruments were sterilized and washed in boiling water in the manner I have described. No sponging of the eye, of course, was required, so that nothing came in contact with it except the sterilized instruments just mentioned. As soon as the operation was completed the patient was made to close the eye, and over the lids a compress, wet with a solution of opium and boracic, was applied, this being the dressing which I have invariably employed in such cases for years. I did not see the patient on the following day, but on the morning of the next day word was sent me that the case was not doing well, and when I examined the eye early in the afternoon, about forty-seven hours from the time of the operation, the whole of the cornea was in a necrotic condition, there was excessive chemosis of the conjunctiva, and it was evident that the eye was doomed beyond peradventure.

As the patient did not suffer much pain, the question of enucleation was allowed to remain in abeyance, and, after a tedious convalescence, he left the hospital with a smooth, partly atrophied bulb, which for him was better than an empty socket.

What is the most probable explanation of the untoward result which occurred in this case, is a question to which I have not been able to find a satisfactory answer. That a diminished vitality and resisting power in the fluids and cells of the body, due to the inheritance of syphilis, was an important factor in determining the result is altogether probable, and we should, moreover, not lose sight of the fact that, especially in such a subject, auto-infection may have been the cause of the whole trouble.

CAN ALBUMINURIC RETINITIS IN PREGNANCY BE PREVENTED?

BY R. L. CULBERTSON, M.D., ZANESVILLE, OHIO,

Oculist to City Hospital; U. S. Pension Bureau; C. & M. V. and B. Z. & C. Railways, etc.

Before discussing this subject, I will first state the progress of the case reported by me in the May number of this Journal. Six weeks after delivery I gave digitalis for a few days as an experiment, with the immediate result of greatly increasing the albumen and tube casts. Before giving digitalis, the albumen was one-eighth by volume; after giving, it was one-third. I at once stopped digitalis and put her on $^1/_{20}$ grain bi-chloride of gold, and strychnia $^1/_{20}$ grain. The combination of these drugs made her very hysterical; the strychnia was discontinued and the hysterical symptoms at once disappeared. Under this treatment her skin, which had been very harsh and dry, became moist, and the ashy paleness of the face, peculiar to Bright's disease began to disappear and her spirits, which had been greatly depressed, changed from despondency to cheerfulness. Within a week the albumen had diminished to one-eighth and in another week to one-tenth with considerable improvement in vision; about this time her menses came on and after this there was still greater improvement in vision. After taking the gold for a month, the albumen had diminished to one-fifteenth and there have been no tube casts in the urine for a month, although there is still considerable renal epithelium. Her skin is very active. Ten weeks after delivery the ophthalmoscope showed the following condition: R. E. media normal; the disc is very pale and shows marked atrophic cupping; the retinal haze has disappeared; the arteries and veins both on the disc and in the stroma are greatly diminished in size (to the third (?) degree); the arteries show the characteristic white line found in many cases of Bright's disease and due to hypertrophy and degeneration of the muscular walls of the vessels. There was no hæmorrhagic spot in the retina but the pearly white spots of fatty degeneration were scattered all through the retina, particularly in the posterior pole. The L. E. showed a slight haze about the disc, which was very white but did not show any atrophic cupping. The veins were normal in size; while the arteries were somewhat larger than normal, due, no doubt, to the dilatation caused by the bi-chloride of gold, and did not show the white line along their walls. While the retina had suffered severely from fatty degeneration, the macula was intact. Remote vision, R. E.$= {}^{1}/_{LX}$ Sn. L. E.$= {}^{4}/_{V}+$; proximal vision, R. E. $= {}^{0}/_{XXX}$ Sn., L. E.$= {}^{6}/_{XXX}$ Sn., which is normal. Eleven weeks after delivery she commenced to take ${}^{1}/_{100}$ grain doses of trinitrin (nitro-glycerine) three times daily and I soon increased the dose to ${}^{1}/_{50}$ grain. After taking trinitrin for one week the albumen is diminished to ${}^{1}/_{20}$. The vision of R. E. has improved from ${}^{1}/_{LX}$ to ${}^{4}/_{LX}$ Sn. Proximal vision R. E.$= {}^{4}/_{XX}$ Sn.

ETIOLOGY.—J. H. Wilson,[1] quoting Dr. Hofmeier, says that there were 137 cases of nephritis complicating pregnancy, out of a total of 5000 deliveries. Dr. Wilson[2] also says that heredity enters largely into the etiology, and cites cases.

Dr. F. A. Mahomed[3] says, "that albuminuria in pregnant women is due to the great increase of excrementitious material in the blood, and the organs of secretion have to do increased work." Prof. Halbertsma[4], of Utrecht, says: "Albuminuria in pregnant women was specially observed when there was want of proportion between the gravid uterus and the abdominal cavity. The cause of albuminuria in pregnant women was, in the greater number of cases, tension and compression of the uterus."

---

[1] Transaction Ninth International Medical Congress.

[2] Ibid.

[3] American Journal Medical Sciences, 1875.

[4] British Medical Journal, 1884.

Dr. Fordyce Barker[5] says: "I express my conviction, based on my experience and observation, that in nine cases out of ten, in private practice, where albuminuria is found in pregnant and parturient women, the structural lesions of the kidney, which can be properly designated as Bright's disease, did not exist previous to pregnancy; and even in hospital practice, where the organic changes exist in a large proportion of cases, it is my belief, after a careful review of my experience, that the assertion I have just made is true in seven out of ten cases. Formerly I believed more fully than now in the mechanical theory, first suggested, I think, by Dr. Cormac, that in a large proportion of cases it was the result of venous congestion, caused by the pressure of the gravid uterus on the emulgent veins of the kidney."

The theory accepted by the majority of writers is that albuminuria in pregnancy is due to the diminished calibre of the arterioles,—hence, dry skin—and enormous increase of blood-pressure in the kidneys. Whether the blood pressure was abnormally increased by pregnancy or whether it existed before the first pregnancy and was only augmented by gestation, is not shown by any author, so far as I can learn. The case I reported, complained of flashes of heat and great nervousness at times before she became pregnant, and also micturated several times at night. These are undoubted signs of the heightened arterial tension, pathognomonic of Bright's disease.

The kidneys are sometimes slightly affected by colds, scarlatina, fevers, etc., but perfom their functions properly until the woman becomes pregnant, when the extra work thrown on them causes them to fail to perform their work.

Dr. Johnson[6] says "that sea-bathing is a common prim cause of albuminuria." May not menstrual irregularities be a primary cause of Bright's disease? May not vicarious menstruation be a cause?

---

[5] Medical Record, 1888.

[6] British Medical Journal, 1879.

DIAGNOSIS.—Albuminuria will be readily diagnosed by tests. But several authors have pointed out that uræmia may exist without albumen being present in the urine. The microscope in many cases will reveal tube-casts and renal epithelium. The patient will complain of a dimness of vision, or, if the optic nerve be seriously involved, will complain of seeing "flashes of light" before her or that "things look colored." Micturition will be frequent.

Dr. T. R. Pooley[7] says: (1) In all cases of pregnancy not only should examinations of the urine be systematically made, but the eye should be examined with the ophthalmoscope, since in a large proportion of cases where eye troubles exist, the patients make no complaint of disorders of vision. Frequently such troubles can be detected with the ophthalmoscope long before any disease of the kidney is shown in the urine. (2) In uræmic amaurosis without changes in the eye visible to the ophthalmoscope, even should the usual accompanying symptoms, such as dizziness, nausea, and threatened convulsions be absent, their supervention is soon to be anticipated; and the immediate induction of premature labor is indicated, without waiting until the life as well as the sight of the patient is in danger. (3) In neuro-retinitis the induction of premature labor is not only justifiable but demanded. In some instances it is called for even in the earlier months of pregnancy. (4) It is required in certain cases of eye trouble recurring in successive pregnancies."

The author desires particularly to point out the importance of examining the urine of *all* pregnant women, if possible, and to *examine the pulse and heart. Is the pulse tense and wiry?* Is there hypertrophy of left ventricle? *Is the second sound of the heart abnormally accentuated?* It would be well, if in doubt, to use the sphygmograph in these cases. Ascertain the family history. Has there been gout, calcareous degeneration of arteries, paralysis, Bright's disease, rheumatism or

---

[7] Journal American Medical Association, 1888.

American gout among ancestors? Or has the patient herself been subject to neuralgia, lithæmia, biliousness, flashes of heat, dryness of skin, frequent micturition, palpitation of the heart, despondency, nervousness, etc.? If she has been, you might suspect she would be a fit subject for albuminuria of pregnancy.

TREATMENT.—As to the advisability of premature labor, I have spoken in a previous article, but I will here quote McNamara[8] who says: "With reference to the sight, every week the confinement is postponed, after symptoms of rapidly advancing retinitis have declared themselves, the greater the risk of permanent loss of vision, for the destructive changes in the retina are apt to make sudden, frequently rapid, and irrecoverable strides in cases of this kind."

As to prophylaxis you will inquire into the family history, as I have before stated, and will examine the eye-ground pulse, etc., and should you find the pulse abnormally tense and the second sound abnormally accentuated, and if there is the slightest haziness about the retina or optic disc; or if there are white lines along the course of the retinal arteries even though there be no albumen in the urine, I would suggest the continued use of small doses of nitro-glycerine (call it trinitrine to patients) in $^1/_{150}$ to $^1/_{100}$ gr. three times daily until pregnancy is terminated if necessary. Likewise give a long course of it after pregnancy, should it be indicated. Bichloride of gold might be used instead of nitro-glycerine. In using either remedy it will be necessary to give mild cathartics to keep the bowels open, as either of these remedies causes constipation by diminishing the peristaltic motion of the bowels. Should the above doses not diminish the pulse tension, etc., it will be necessary to give a larger dose and more frequently repeated. I think $^1/_{100}$ to $^1/_{75}$ gr. three times daily sufficient if there be no albumen in urine. After a careful search of several hundred volumes on the subject, I have found but one author who advises nitro-glycerine as a prophylactic during pregnancy, and it appears in his case it was only used in advanced stages of pregnancy and where there was albumen in the urine. I refer to the paper of Dr. Fordyce Barker,[9] who says: "I think the evidence is conclusive that, by appropriate prophylactic treatment, the uræmia and albuminuria may be almost entirely averted. I will take this opportunity to speak of one agent which, I think, may prove of great value in the treatment of the uræmia of pregnancy, but which, so far as I have seen, has never been mentioned in this connection—and that is nitroglycerine in doses of $^1/_{100}$ to $^1/_{50}$ of a minim repeated every three or four hours. It effect is to speedily reduce arterial tension and allay spasm of the cerebral and renal arterioles, and thus indirectly increase the functional activity of the kidneys and marvelously quiet the nerve storm characteristic of these patients."

---

[8] London Lancet, 18,8.

Would it not be well for family physicians who attend families whose members, or ancestors of, have had gout, rheumatism, dyspepsia, kidney disease, heart disease, etc., to instruct mothers that before their daughters enter upon matrimony they should be examined by a competent physician for any symptoms of incipient "contracted kidney," and also by an ophthalmologist, so that the prophylactic means may be used should it be required. Further I would recommend that country physicians be more particular to send cases to oculists for ophthalmoscopic examination and as soon as recognized.

Dr. A. W. H. Robson[10] recommends very highly nitro-glycerine in acute and chronic Bright's disease. In one case of acute Bright's disease he cites a short time after its exhibition the nitrogen in the urine increased from 150 to 250 grains. He makes no mention of its use in pregnancy. What is the use of draining the very lives out of patients, already greatly weakened by the poison in the system, by constantly giving them drastic purgatives, etc., to reduce the blood pressure, when it can be lowered by other and more powerful means, *i. e.*, nitroglycerine or bichloride of gold? Keep all knowledge from patients that would worry. Dr. Fordyce Barker[11] says, "Bright's disease has become so familiar to the public, as one which sooner or later must terminate fatally, that it inevitably depresses the patient, and especially carries terror to the minds of women during gestation, and to their friends." Nearly all oculists are agreed that the danger to the sight is greatly increased should the woman become pregnant the second time, having had retinitis or neuro-retinitis in the first pregnancy. The time-worn belief that if a woman had albuminuria in her first pregnancy, a subsequent pregnancy would cure her of the albuminuria, has about passed away, since the pathology of kidney disease has been so thoroughly investigated. An organ that would suffer such severe inflammation or congestion in one pregnancy would be so weakened that it would almost certainly be similarly affected in a subsequent pregnancy, even if the disease had been caused by pressure of the gravid uterus on the renal vessels. Where albuminuria is due to valvular heart disease, the danger to life is much greater than in other forms. Digitalis, strophanthus, convallaria, tr. iron, etc., are given in this form. Bichloride of gold would be contra-indicated here. Some authors recommend nitro-glycerine in this form, where there is compensatory hypertrophy. For further information on the use of nitro-glycerine, I will refer my readers to Dr. A. W. M. Robson's excellent artical on "Nitro-Glycerine" in the *British Medical Journal*, 1881. Robson was the first advocate of its use in Bright's disease, while the first, I belive, to advocate its use in America, and that of chloride of gold also, was Dr. Bartholow, who wrote an excellent article on its use in the *Boston Medical and Surgical Journal*, 1884.

---

[9] Medical Record, 1888.

[10] British Medical Journal, 1881.

NOTE.—A communication just received from Dr. Roberts Bartholow, the most eminent authority in this country on materia medica and therapeutics, says: "The chloride of gold and sodium can be given during pregnancy. If there be indications of abortion or premature labor, or any hæmorrhage, or labor has set in, nitro-glycerine will not do. It is true it is a powerful means of averting heart failure from any cause. In advising its use you should append the caution to be observed on these points." A point to remember in the administration of nitro-glycerine or bichloride of gold is that it may cause amenorrhœa when administered to non-pregnant women during or just before menstruation, hence they should be discontinued during, and for several days before, menstruation.

---

[11] Medical Record, 1888.

Cases of Albuminuric Retinitis in Pregnancy, and by Whom Reported.

Blindness.	Partial Recovery of Sight.	Recovery of Sight.
Cases reported in the American Journal of Ophthalmology, May, 1894 9	Cases reported in May, 1894 21	Cases reported in May, 1894 6
Lawson 1	R. Lee 1	Lee 1
—	Loring (New York) . . 1	Brecht (Berlin) . . . 1
Total 10	W. Cheatham, (Louisville, Ky.) 1	—
23.33%	A. Alt (St. Louis) . . . 1	Total 8
	—	18.54%
	Total 25	
	58.25%	

Besides the journals enumerated in my article in the May number of the American Journal of Ophthalmology, I made a thorough search of the following: *Philadelphia Medical Times*, *Cincinnati Lancet-Clinic*, *Boston Medical and Surgical Journal*, *New York Medical Journal*, *American Journal of Medical Sciences*, *Braithwaite*, *Archives of Ophthalmology and Otology*, *Transactions of the International Medical Congress*, *Receuil d' Ophtalmologie*, etc.

Since closing the above article, I find that I neglected to add several very important suggestions from Dr. Edward Loring,[12] who says: "I would conclude, first, that examinations as to the condition of the eyes of pregnant women should be made much more frequently than they now are, and that these should be made in a routine manner, even when the patient does not complain of any unusual disturbance, since it has been discovered that about one-third, or thirty-three per cent. of those who have an organic lesion of the retina or optic nerve from kidney trouble either have none or make no complaint of any reduction of vision. Thus a retinitis or neuro-retinitis, which in its primary stage may exist and often does for months unsuspected by either the patient or physician, may lead after a long interval, through the secondary or atrophic state to complete blindness. Mr. Eales reports that a single physician was able to furnish him for examination from a single hospital in Birmingham twenty-eight cases of neuro-retinal disease from kidney trouble in one year, while out of eleven thousand cases of general eye disease at the Eye Infirmary only four such were seen."

---

[12] Premature Delivery for the Prevention of Blindness, in the Transactions of the American Ophthalmological Society, 1882.

SOCIETY PROCEEDINGS.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

MAY 1894 AT WASHINGTON, D. C.

The meeting was called to order by the President, Dr. George C. Harlan, of Philadelphia.

The first paper announced was by Dr. E. E. Holt, entitled "*Removal of Steel from Vitreous*," which was read by title.

The next paper announced was, "*Recent Experiments in the Treatment of Detatchment of the Retina.*"[1]

DR. SAMUEL THEOBALD, of Baltimore.—Mr. President, I should like to ask Dr. Bull how he makes the puncture in the sclera; what knife he uses?

DR. BULL.—I always use the narrow knife of von Græfe, making the puncture of the sclera in the quadrant corresponding to the detachment; always making a wound through the conjunctiva at some distance from the point I desire to reach and separating that until I get at the proper place. I have not found it necessary to induce the conjunctiva to separate.(?) The edges coapt themselves without any binding suture.

DR. THEOBALD.—Did Dr. Bull make the puncture only to the extent of the knifeblade?

DR. BULL.—I always enlarge it, making a wound two and one-half to three millimetres in length.

As to Schölers' operation, which Dr. Risley just now asked me about, it consists in making a puncture through the coats of the eyeball into the vitreous chamber and injecting from two to six drops of the tincture of iodine slowly and awaiting the results which he hopes to be induced, by the inflammation to be set up, in the vitreous chamber. Three years ago I reported to this society a series of five cases in which I had performed that operation with the most lamentable results. The experience then had proved to me that the method recommended by Schöler should be positively abolished.

---

[1] No abstract of this paper was obtained.

DR. G E. DE SCHWEINITZ, of Philadelphia.—Mr. President, I have listened with great pleasure to the very interesting paper of Dr. Bull because I had the opportunity of seeing a considerable number of these operations in the Philadelphia Pauper Hospital. I have seen a good many cases of detachment of the retina and my experience coincides exactly with Dr. Bull that there is nothing quite equal to rest in the care and treatment of those cases. I published a number of my cases some time ago in which the operations were unsatisfactory. I had the opportunity of following these cases for a long time and have kept a record with regard to the field of vision in each. I would like to call the attention of the gentlemen present to the medical treatment; to add one observation to that of Dr. Bull; that is, that in addition to the rest cure, the putting to bed, the bandage and atropine, instead of pilocarpine the use of salicylic acid should be substituted. I am aware that this is not entirely a novel suggestion, especially abroad where much has already been written upon the subject. I was led to particularly use it by the results found by my friend, Dr. George Dexter (?) of the University of Michigan, in the treatment of pleural effusions. I do not know that this is any better than pilocarpine in physiological action so far as the absorption of the fluid is concerned, but my experience in old people with cardiac disease is that of Dr. Bull's that pilocarpine acts badly while salicylic acid or salicyliate of sodium does not have this bad effect, but it does have some influence in causing the absorption of the fluid. I have not used it to the exclusion of putting the patient in bed, so that I do not know its exact relation and value proportionately, but the fact remains that it seems to have some extraordinary power in absorption. I have never seen a retina replace itself, but I have seen the field of vision improve very remarkably especially in old people by reason of the use of this drug. I presume all the gentlemen present are acquainted with the many papers which have already been published abroad with regard to it. Its effects in pleural effusions have been most remarkable. I simply desired to bring this suggestion to the attention of the members of this society.

The next paper announced was "*Two Cases of Sympathetic Inflammation,*" by Dr. F. M. Wilson.

At the close of Dr. Wilson's paper, the following physicians were invited to be present at the sessions of the society and to participate in the discussions of the papers read: Dr. George Gould, of Philadelphia, Dr. Allen, of Pittsburg, Dr. Reik, of Baltimore, Dr. Anton Coe, of Washington, Dr. A. E. Adams, of Newburg.

The next paper announced was "*Two Recent Magnet Operations; one an ideal success, the other a total failure.*" by Dr. H. Knapp, of New York.

DR. KNAPP reported two cases of magnet operation. In the first which he saw eight hours after the injury, the foreign body could be seen as an air bubble with the ophthalmoscope. One day of rest cleared the eye in such a way that the patient refused to have the foreign body, which stuck in the retina, extracted. Two days later, however, the eye began to inflame and he asked for the operation. The incision was made obliquely through the sclerotic near the foreign body. The foreign body was extracted by the first introduction of the tip of the magnet. Recovery quick and undisturbed.

In the second case, where the injury had occurred six weeks previously, the foreign body could not be seen, the vitreous being cloudy. Repeated introductions of the magnet failed. The eye was enucleated at once, however, but the foreign body could not by any means be discovered, Dr. Knapp, to illustrate a possibility that it might have pierced the posterior wall of the eye showed an eyeball recently removed where a chip of iron stuck in the posterior part of the sclerotic, its point being distinctly felt and seen. Dr. Knapp spoke of the statistics published by Hirschberg and Hildebrand (Mayweg) which showed 15 and 31% of good results having been obtained from the extraction of foreighn bodies with the magnet introduced into the vitreous. He said that his experience from cases that had remained under observation longer was by no means as favorable. In fact, the permantently successful cases were exceptional. As to the operation, he recommended a wound obliquely through the sclerotic because by being closed through the intraocular pressure, it favors immediate union. Further, he recommends the use of a sterilized platinum wire for holding the wound sufficiently open to keep the foreign from being stripped from the magnet by the edges of the wound.

DR. KNAPP mentioned the experiments of Dr. Haab, of Zürich which were confirmed by Dr. Schlosser according to the reports at the last two meetings of the German Ophthalmological Society. They consisted in drawing iron or steel fragments from the depth of the eye through the vitreous and even through the lens into the anterior chamber by means of putting the eye into contact with a broad electrode of a very strong magnet (Rumkorff coil). From the anterior chamber their extraction was easy. These astonshing facts should be tested in suitable cases as well as experimentally.

DR. W. E. LAMBERT, of New York.—Mr. President: I would like to mention a complication which happened in a magnet operation which I know of and I would like to know if any of the members present have had experiences of a similar nature. In this instance, the patient had the lens punctured by a piece of steel. A portion of this was left in the anterior chamber and a portion in the lens. The iris hung on to the piece in the chamber and after the incision was made in the cornea and the magnet introduced I could not succeed in drawing it out. Finally, I had to do an iridectomy. In performing this, the steel was pulled out of the lens but fell into the anterior chamber. There was an immediate hæmorrhage from the iris which filled the anterior chamber. This, of course, was very annoying because it is very hard to get rid of the hæmorrhage in the anterior chamber and I thought all my work was ruined for the time being. I introduced the magnet to search again but the hæmorrhage clotted immediately. I then fancied I was in a worse position then before. I was entirely mistaken. This proved to be my salvation, for I could push the clot aside and leave a clear space, which I did by using the iris forceps. After introducing the magnet again, a little piece of steel flew out and became attached to the magnet and I succeeded in getting it out with the aid of the forceps. This clotting of blood was a complication which I had never seen before.

DR. W. S. BENNETT, of New York.—I would like to ask, Mr. President, about the coil of wire spoken of by Dr. Knapp?

DR. H. KNAPP, of New York.—The eye was attached to the broad end of a Rumkorff coil. The eye was attached so that the full force of the coil was obtained and this was done only with the idea of drawing the steel where I could extract it afterwards in some other way.

DR. JOHN GREEN, of St Louis.—Allusion has been made to the foreign body being frequently rolled off in the cut at withdrawal through the scleral wound. Most electro-magnets in the market have a tip which is nearly cylindrical or slightly conical in form. My colleague, Dr. Ewing, of St. Louis, some years ago, had an electro-magnet made, the pole of the magnet being different from the ordinary conical form; in two or three cases they were made flat. Quite large chips of steel have from time to time been succesfully removed with very little of that tendency to rub off the piece of steel at the moment of exit. I think tips of that form have a very decided advantage in very many cases over the ordinary conical tip of sectional cross section, such as is ordinarily provided by the instrument makers.

DR. H. KNAPP, of New York.—Mr. President; Just one word in concluding this discussion. Dr. Green mentioned a flattened tip for the electro-magnet. This, I think, an extremely good thing. Such a platinum tip has been used in my practice partially in withdrawing a piece of steel but principally in getting loose foreign bodies which are embedded in the iris, which are seen very infrequently and when we introduce the flat electrode, the wound of the cornea need not be so large and we can pass it more easily through the wound and through the anterior chamber between the iris and the cornea itself, the anterior chamber being, of course, empty. This is certainly true also; but he mentions another advantage. He says that such an electrode is able in some cases to tear the foreign body loose from its connective tissues and attachments to the iris. Foreign bodies, being aseptic can lie in the iris an indefinite length of time; on the other hand, such bodies may give rise to trouble at any moment. They are more or less firmly attached to the iris and a magnet introduced just where the steel is can loosen it by lateral movements.

The next paper read was, "*Foreign Bodies in the Orbital Cavity*," by Dr. W. B. Johnson, of Patterson, N. J. (See June No., this Journal).

The following gentlemen were, on motion, invited to take seats with the Society and participate in the discussions:

Dr. H. O. Wright, of Boston, Dr. Thomas D. Coleman of Augusta, Ga. and Dr. Aikin, Savannah.

DR. H. KNAPP, of New York.—Mr. President: Eoreign bodies in the orbit are sometimes very difficult to deal with, both as to diagnosis and treatment. A few months ago I was called by a surgeon in consultation to see a boy who had been wounded by a No. 22 birdshot, which had entered the upper inner corner of the orbit. The eye did not move upwards and the upper part of the orbit was hard, evidently filled with blood. As we could not locate the body we agreed that the most advisable course to pursue was to wait. This course was followed, and the boy who had had complete ptosis recovered the mobility of his eye to a certain degree. When I first saw the patient immediately after the injury there was a good deal of blood in the interior of the eye, in the inner upper part the retina was raised,apparently detached; lower down,I could not see the fundus clearly. I thought that this was simply owing to the foreign body having struck the eye on the posterior part outside and producing hæmorrhage inside. It is now some two months since the accident occurred. Now the interior of the eye has cleared up and in the inner, upper part there is a long scar about five or six diameters of the optic disc and around it a good deal of black pigment. Below the optic disc there is a hemispherical elevation of two disc diameters in breadth and three in length. Its crest can be seen sharply with strong convex lenses. The retina covers this foreign body without any movement and the surface of the elevation is slightly striated and is grayish white. From all this I could only conclude that the bullet had not merely struck the sclerotic, but had pierced the eye and is now fastened at the background in the lower part, causing no irritation. The fourth case mentioned by Dr. Johnson, reminded me of this case.

DR. W. B. JOHNSON, of Paterson, N. J.—Mr. President: I remember a case in which a shot from a shotgun—birdshot—passed entirely through the eyeball. I think I reported that case with 13 or 14 other cases in Milwaukee last year under the title of "Quiescent Foreign Bodies." That birdshot, however, passed entirely *through* the eye and there was a subsequent return of normal vision in that eye, although the shot passed just without the limbus in the ciliary region and the point of location at which the shot passed out of the eye could also be located.

It became a foreign body in the orbit and became encysted there, I suppose. There was no further trouble and the vision became normal. I think these are very interesting cases. Fortunately we do not see very many of them and I think it is a very good thing that we don't, although the orbital contents certainly in a great many instances are able to withstand a great deal of injury and come out of it in very good shape. Case No. 2, however, in which the foreign body penetrated the cerebral cavity was very serious.

DR. THEOBALD reported several cases of "*Subnormal Accommodative Power.*" In 1891 he had presented a paper to the Ophthalmological Society entitled "Subnormal Accommodative Power a Not Infrequent Cause of Asthenopia in Young

Persons," by which was meant persons under the presbyopic age. The doctrine of subnormal accommodative power, as set forth in his previous paper, was based upon the observation that in eyes, in every respect normal, the vertical diplopia test should show orthophoria at 20′, but exophoria of from 3° to 5° at the reading distance, or put in other words, the vertical diplopia test at 13″ should give, as compared with the test at 20′, a difference in favor of the external recti muscles of from 3° to 5°. When this is not the case subnormal accommodative power (due to a weak ciliary muscle or an inelastic unresponsive lens), must be assumed to be present. This condition may exist apart from refraction or other muscular errors or may be associated with them. Its existence in emmetropia calls for convex glasses for near vision only; in hypermetropia for stronger glasses for near vision than those which would be prescribed simply for the correction of the hypermetropia, and in myopia for weaker concave glasses for near vision, than would otherwise be indicated.

The most striking of the cases reported was that of a young woman twenty-three years of age, with less than .25D. of manifest hypermetropia, and with not .50D. evident to the ophthalmoscope, who derived complete relief from marked asthenopia and persistent headaches by wearing in near vision + 2. s. glasses decentered outward. The diagnosis of subnormal accommodation in this case was based upon the fact that, while the vertical diplopia test revealed at 20′ esophoria of only 2° to 3°, the same test showed at 13″ esophoria varying from 8° to 22°. With the glasses as prescribed (+ 2. s. decentered outward) this high degree of esophoria at 13″ gave place to orthophoria.

DR. THEOBALD reported a case of "*Panophthalmitis Suppurativa Following Discission of a Capsular Opacity*," in a negro boy, who was probably the subject of inherited syphilis. (See this journal).

Absolute asepsis in eye operations, he thought, was not attainable, but, on the other hand, Nature helps us with our eye surgery. The conjunctival sac is not a favorable field for the development of pyogenic organisms, and, in consequence, suppuration rarely occurs, notwithstanding our imperfect antiseptic measures.

Careful antiseptic precautions, including sterilization of the instruments employed, were practiced in the case reported, yet the whole cornea sloughed and the eye was practically destroyed within forty-eight hours after the discission (a smooth and satisfactory operation was performed). The lessened resisting power of the cells and fluids of the body, due to the inherited syphilis, was thought to be a factor in bringing about the unfavorable result and the possibility of auto-infection was mentioned.

DR. THEOBALD reported a case intending to show that the ophthalmoscope, at times, fails to reveal latent hypermetropia. As a rule, in expert hands, he thought all, or nearly all, of the hypermetropia could be detected by the ophthalmoscope without the employment of a mydriatic; but there are marked exceptions to this rule.

The case reported was that of a lad nine years of age, with asthenopia and miliary choroido-retinitis. Only 1. D. of hypermetropia was revealed by the ophthalmoscope in the right eye and slightly more than this in the left eye, yet a mydriatic showed 4. D. in the right eye and 5 in the left, with slight additional astigmatism in each.

DR. GEO. W. HALE read a paper entitled "*Muscular Asthenopia.*" He took the position that the cause of muscular asthenopia was almost always central rather than peripheral, citing several well known conditions of the eyes as proofs of the above.

He did not believe that the relation between accommodation and convergence were fixed and unchangeable. If they can be separated all our cases of exophoria, which he believes to be the chief cause of muscular asthenopia, should be amenable to treatment.

The carrying of the weighted convergence stimulus from the punctum proximum to infinity, is practically an infallible cure for all such cases.

DR. G. C. HARLAN reported "*Three Cases of Malignant Tumor of the Orbit.*"

CASE I.—Epithelial orbital tumor originating in the lachrymal sac; rapid recurrence. The patient was a farmer, forty-eight years of age, in good general health. His attention had been first called to the right eye, eight months before his admission to the hospital, by an overflow of tears. Afterwards there was a good deal of pain in the eye and temple and the lower lid commenced to swell. The lower lid was protruded and the eye was pushed upward and outward by a tumor which reached from the inner canthus to the junction of the middle and outer thirds of the lid, overlapped the orbital margin and extended back into the orbit on the lower and inner side of the ball. It was entirely beneath the conjunctiva, which was not involved, and was solid and very hard to the touch. The nasal sinuses were free from disease. The eye suffered only from pressure and $V.={}^{15}/_{CC}$.

The tumor was removed through a free incision in the lid without disturbing the eyeball. It was as large as a small hen's egg, was firmly adherent at the lachrymal groove and extended, along the floor and inner wall of the orbit, nearly to the optic foramen.

Microscopic examination proved the growth to be an undoubted epithelioma.

Three months later there was no exophthalmos and vision had increased to ${}^{15}/_{XL}$, but a hard mass of considerable size could be felt at the inner canthus and extending back into the orbit in the position of the former tumor. The whole contents of the orbit were now removed. There was extensive distension of the walls of the lachrymal groove making an opening large enough to admit the end of the little finger.

CASE II was a large round-celled sarcoma originating in the capsule of Tenon and completely filling the orbital cavity. The patient, a laborer, fifty-two years of age, had suffered no inconvenience until three months before the operation.

CASE III was one of small round-celled sarcoma of the orbit, rapidly recurring and attaining an enormous size, in a child nine years of age. The disease commenced in August and the contents of the orbit were removed in November. The growth recurred in December and increased with great rapidity until it was more than half as large as the child's head. There were no cerebral symptoms and no pain. Death occurred from exhaustion in April. The eyeball was not involved in the disease but was destroyed by pressure. At the time of the operation there was no communication with the neighboring cavities but the growth subsequently invaded the nasal sinuses and the cranial cavity.

DR. A. A. G. HEYL, of Philadelphia.—I would like to say a word or two with reference to aniline dyes in the treatment of epithelioma. In Germany the aniline dyes have been used in subcutaneous injections and I have under my care at present a case which I will here mention. It came to me with the following history: Seven years ago a small scab appeared near the external canthus. It was removed by a surgeon, but the wound never perfectly healed. Two months ago there was a large ulcer with profuse granulations near the outer canthus, The cornea was destroyed and a subcutaneous brawny swelling clear out to the temple existed. To have attempted to remove or dislodge the tissue would have required an area as large as the palm of my hand with every chance of making matters much worse. I gave the patient a simple wash of yellow pyoktanin, and was surprised at the end of three weeks to find that the brawny swelling about the ulcer was disappearing. The case has continued to grow better until at the present time, the ulcer is closing up and, it may be possible to do something by operative measures. I have treated another case of epithelioma with this same lotion with a little benefit or with nothing like the benefit in this present case The case I have in mind is one where the lid has been partially destroyed and the tissues below the lower lid encroached upon by the ulceration. The two cases were microscopically dissimilar. The case benefited by the pyoktanin was characterized by exuberant granulations on the ulcer and brawny subcutaneous swelling. In the case not benefited the surface of the ulcer was smooth and depressed below the skin surface with little brawny infiltrations about its edges. Possibly the great uncleanliness of this patient along with alcoholism may have interfered with the action of the drug.

I speak of these cases to call attention to the use of aniline dyes as a palliative of some value in this disease.

DR. B. ALEXANDER RANDALL, of Philadelphia.—I was of the opinion that the aniline dyes might possibly be of some value, in combating neoplasms so I used them in some epitheliomatous conditions. But any predilection I might have had in their favor was dashed the other day by the reappearance at my clinic of a patient with epithelioma of the auricle. I thought I had completely curetted away the growth, when it was recent and small, as well as dressed freely with pyoktanin, but the man reappeared some six months later—perhaps a year later —with a much more extensive greater recurrence. This was again removed and the surgical intervention may result in permanent success.

DR. R. A. REEVE, of Toronto, Ont.—Mr. President: I would like to mention a case of orbital sarcoma unconnected with the eyeball primarily, which was under my care some years ago and in which case I photographed the tumor. This was 21 inches in circumference, weighed 23 ounces and was removed simply to relieve the child from the effects of the weight and distress.

DR. W. B. JOHNSON of Paterson, N. J.—Mr. President: In conjunction with the injections mentioned in sarcomatous disease, I have had some little experience with the toxic products of erysipelas and while I cannot say anything in its favor as being effective in these scarcomata of the orbit, I have had one case of sarcoma of the pharynx where the cicatricial bands choked or destroyed the sarcomatous tissue to a very great extent. I had some little experience with the toxic products of erysipelas also in connection with Dr. Cooley and treated a case in my city which, however, resulted unfavorably. It was a case of sarcoma involving the temporal bone, extending to the dura. But I would like to say here that I think that in view of the fact that there certainly have been cases of sarcomatous disease which have been alleviated by the use of the injections of the toxic products of erysipelas, it is a desirable thing that it should be further tried, especially should further trial be made upon those of inoperable sarcoma where anything would be better than nothing.

DR. SWAN M BURNETT, of Washington, D. C , read a paper entitled, "*Tumor of the Intervaginal Space of the Optic Nerve Sheath.*"

The patient was a boy of seven years who had a left exophthalmus of three years' standing, and of slow and painless growth. The posterior wall of the globe was on a level with the bridge of the nose. Movements somewhat restricted but about equally in all directions. Proptosis directly forward; vision gone; nerve head white, retinal veins enlarged and tortuous; eye otherwise healthy. The impaired vision (fingers at three feet) and slight exophthalmus first noticed after an attack of *la grippe*. A large, rather soft mass was found occupying the apex of the orbit and the optic nerve, very much enlarged, passed into it. The eye and the nerve attached to it were removed after cutting the nerve close to the large mass. The latter was then taken out through the opening in the conjunctiva. The large tumor measured 35×25×15 mm. after hardening in absolute alcohol. In shape it corresponded to the apex of the orbit at that locality. The tumor around the optic nerve reached up to the lamina cribrosa and was confined strictly to the intervaginal space, neither the dural nor the pial sheaths being affected. The structure of the tumor was not uniform and consisted of long fibers which were usually nucleated at some part of their course, shorter fibers which were reduced in the larger tumor to nucleated spindle cells, hyaline plaques most numerous in the large tumor, and nests of large oval cells with nuclei which were also most plentiful in the large tumor. This larger (older ?) mass was also denser and more vascular than the portion nearer the optic nerve entrance, and the walls of the vessels were frequently hyaline.

A year after removal the boy was in better health than before and there are no signs of a recurrence. From a study of the literature of these tumors around the optic nerve the author is led to regard them all of essentially the same nature, the difference in the appearance as they have been described, being due to the state of growth or degeneration at which they were moved and examined. They are not malignant, certainly not those which originate, as with rare exceptions they all do, from the intervaginal space, and he is inclined to believe they are embryonal in their character.

DR. KNAPP, of New York.—Mr. President: I would like to make a few remarks with regard to three cases mentioned by Dr. Harlan, with regard to sarcoma of the orbit. These tumors may originate in the adjacent cavities, especially when they produce exophthalmos. I was very much puzzled by a case similar to the one of Dr. Harlan's the winter before last where a child of healthy parents developed an exophthalmos within two or three days. The upper lid was somewhat swollen and the eye pushed almost straight forward, but on the firmest pressure I could not detect any tumor. In a week the exophthalmos was very much greater and a distinct tumor was felt on the inner upper side of the orbit. This tumor could not be anything but a sarcoma and I advised removal which was done immediately afterward, but there was a defect in the upper inner part of the orbital wall and the tumor rapidly returned. Springing from the ethmoidal or sphenoidal cells I have seen a number of cases. They produce exophthalmos, which is rapidly progressive as soon as they pierce the orbitl wall. The accessory cavities of the orbit and of the nose are a much more frequently the origin of orbital disease than we suppose. The greater my experience becomes, the more convinced I amof this.

DR. C. S. BULL, of New York.—Mr. President: My opinion, which has been gradually developed from my experience in almost all the cases of orbital tumor in which there is a very rapid increase of the exophthalmos, is, that the origin of the trouble is either in the ethmoid or sphenoidal sinuses. That is the result of my experience in post-mortem examinations and clinical observations. While, as surgeons, we are justified I think in doing everything we can to relieve the unpleasant symptoms, particularly that of pain, yet I think it is our duty to tell our patients where we have formed an opinion as to the origin of these tumors, even in case where an operation has not yet been done, not in the cases of relapsing tumors but in original tumors, that the seat of the disease is so deep that no favorable result can be expected; that, even, if we remove the portions in the orbit, the growth will return because of the location of the original tumor and that the life of that patient is inevitably shortened by operative procedure directed toward the removal of the tumor. Furthermore, that in a relapsing tumor the removal of the growth materially and rapidly shortens the life of the patient. If these facts are stated to the patient and his family and they are willing to accept the issue, it is probably our duty to operate, but in my opinion not otherwise.

DR. H. KNAPP, of New York.—Mr. President: I would like to touch upon the last part of Dr. Burnett's paper, that is, the removal of the outer wall of the orbit the osteo-plastic method according to Krönlein.

DR. FREDERIC LANGE, of New York removed an orbital tumor about two years ago. There has been no recurrence and there is scarcely a scar. I am, therefore, rather inclined to believe that this modern procedure of thorough surgery should not be ignored by oculists.

One word with reference to the preservation of the eye in the removal of tumors of the optic nerve. I think I was the first to attempt and perform this operation. It was twenty years ago in a case of endothelioma of the sheath of the optic nerve, published in *Archives of Ophthalmology and Otology*, Vol. iv p. 323, 1874. I desire to say that I saw this patient again about a month ago and that there has been no recurrence and the patient has had no evidence of any metastatic tumor. The eyeball is there well, but shrunken, certainly not so nice as an artificial eye would be, but nevertheless the operation has not given the woman any discomfort.

Dr. J. A. Lippincott, of Pittsburg.—Inquired if such apparently simple tumors cannot assume a malignant character?

Dr. Burnett.—In looking over the statistics prepared by Braunschweig, so far as they can be relied upon, I find that there are very few cases, indeed, in which there seems to be any tendency to malignancy. Of course, one could hardly say that all tumors of the optic nerve are benign, but the cases which are reported as typical cases of myxo-sarcoma and sarcoma, which take their origin in the intravaginal space, from what I have been able to study of them, were not malignant.

Dr. J. A. Lippincott, reported a case of "*Excessive loss of Vitreous in Cataract Extraction.—Recovery.*

W. H. S., age 31, L. E. totally blind from injury in childhood. On making the corneal incision in right eye the vitreous began to ooze out almost imperceptibly at first, because the fluid was so watery. The eyeball gradually collapsed, deep wrinkles showing themselves in the sclera. After the removal of the lens which was accomplished by means of a spoon, leaving a tough capsule behind, the globe did not look any larger than the end of an average sized finger. The case seemed hopeless, but the eye filled up and in four weeks fingers could be counted. The patient had several attacks of iritis, as a result of which the iris became adherent to the capsule. Four moths after the operation vision corrected was $^{15}/_{c}$ and improving constantly.

Dr. C. F. Clark, of Columbus, Ohio, read a paper entitled "*A Modification of the Operation for Canthoplasty.*"

A case of entropion of high degree, with narrowing of the palpebral fissure following many years of neglected trachoma, reported to me some months ago at St. Francis Hospital. She had been operated upon for entropion some ten years before.

The left eye was defective from pannus while the right was practically useless, I operated upon the upper and lower lids of one eye, doing an entropion operation and a canthoplasty at the same time. This was followed in a short time by a similar operation upon the other eye.

Improvement of vision resulted in the left eye and restoration of the ciliary margins to a better position.

The lashes of the right again turned in and after a few weeks it became apparent that the cicatricial contraction at the outer canthus was sufficient to render her condition at this point as bad as before.

I undertook to transplant a spear-head shaped flap of integument from the temple to fill the gap created by division at the external canthus.

The inter-tarsal ligament and the tarsal ligaments were divided as was also the conjunctiva from the external canthus inward, for a distance of about six to eight millimeters.

From the outer extremity of this incision, that is from the junction of conjunctiva with the skin at the external canthus two incisions six to seven millimeters long were made in the skin at an angle of about eighty degrees with one another. At their outer extremities they were turned at an angle and continued in curved lines for about twelve millimeters to complete the fingure of a spear head the shaft of which consisted of a strip of skin about three millimeters wide.

Two additional sutures at the points occupied by the angles uniting these points to the narrow portion of the flap at the neck of the spear-head gave security against retraction by contraction of the flap in its long axis.

After doing in addition to the above an entropion operation, on the upper lid, I applied an antiseptic dressing which was renewed after two or three days.

The eye gradually cleared and vision was soon sufficient to allow the patient to go about the ward, by the aid of this eye alone.

In reviewing to some extent the literature of the subject, I found that others had attempted to obtain relief for blepharophimosis, in a manner very similar to that which I have described.

DR. G. E. DE SCHWEINITZ, of Philadelphia, described a case of "*Epithelioma of the Lower Lid*," removed from a woman, aged 40, a portion of the gap after excision having been filled in with a piece of integument taken from the thigh, so cut as to include only the skin and none of the subcutaneous fat. One year later this flap was firmly incorporated with the surrounding tissues, from which it was distinguishable by its slightly paler color. It had shrunk about one-third of its original size, but had accomplished the purpose for which it was inserted, as the lid was accurately in place and there was no ectropion. Photographs illustrating the condition were exhibited.

DR G. E. DE SCHWEINITZ, also demonstrated the microscopic specimens of a small tumor of the lid which had been removed from a man, aged 40, the clinical characteristics of which were exactly those of an ulcerated meibomian cyst. The sections, however, showed the growth to be a glandular carcinoma. He referred to similar instances which had been recorded by Fuchs, Sourdille, and other authors.

He also described two cases of "*Monocular Diplopia.*" The first was a man, aged 47, who had sustained a severe injury of the head, in a railroad accident, and presented the clinical symptoms of traumatic neurasthenia. The eyes, with the exception of the monocular diplopia, were normal. In the second case this character of diplopia was found in a woman suffering from organic cord disease, but who presented also numerous hysterical stigmata. Both eyes were highly astigmatic, and in each there were small patches of macular choroiditis.

DR. DE SCHWEINITZ, of Philadelphia, presented an abstract of a research by Dr. Emil A. de Schweinitz, of the Bio-Chemic Laboratory of the Department of Agriculture in Washington, to test the value of tri-kresol as a disinfectant, in the preparation of collyria, as well as its action upon the human and animal eye. Dr. E. A. de Schweinitz has demonstrated that tri-kresol solution, 1–1000, may be dropped into a rabbit's eye and also injected into the anterior chamber without causing lesions visible to ordinary examination. Atropine, cocaine and eserine solutions made up with tri-kresol water as a solvent remain sterile, although placed in bottles without special precaution. Bipettes wrinsed with solutions of tri-kresol, 1–1000, and allowed to lie in wide, open-mouthed bottles for some time, also remain sterile. Tri-kresol dropped into a human eye in the strength of 1-1000 produced no irritation. Dr. E. A. de Schweinity suggests that the alkaloids commonly used in ophthalmic practice should be dissolved in tri-kresol water 1-1000, and that the pipettes should be wrinsed in the same solution after use. In collyria thus prepared and standing for three months, no growth, fungous or otherwise, is apparent, and none appears upon culture media.

DR. G. E. DE SCHWEINITZ, of Philadelphia, describes two cases of macular disease, illustrated by water colors, characterized by symmetrical lesions of variously shaped, chiefly roundish bodies resembling small masses of boiled sago or tapioca, of a yellowish white or reddish-yellow tint. These bodies were so related one to the other that they presented somewhat the mulberry appearance of the so-called hyaline or colloid out growths in the optic papilla, although the bluish-gray tint of the latter lesion was not present in this macular deposit.

Dr. de Schweinitz compared these appearances to to the varicosities of the choroid described by De Wecker and Masselon, the central guttate choroiditis figured by Nettleship, and some of the types of degeneration of the macula which have been recorded by Nagel under the name of hyaline growths and crystalline deposits on the inner surface of the choroid. Both of the patients were young women under thirty years of age, and the macular disease produced no disturbance of vision The one patient was healthy, with the exception of atonic amenorrhea; the other was the suject of chronic Bright's disease. Dr. de Schweinitz reiterated his belief that the colloid excrescences of the lamina vitrea and the so-called "drusen," in the nervehead were not identical lesions.

[TO BE CONTINUED.]

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

Vol. XI. AUGUST, 1894. No. 8.

ORIGINAL ARTICLES.

REPORT OF A CASE OF UNILATERAL FACIAL AND ORBITAL ŒDEMA AND EXOPHTHALMOS, OF NEPHRITIC ORIGIN.

BY L. R. CULBERTSON, M.D., ZANESVILLE, OHIO.

Mr. O. M., aged 22, consulted me July 2. The left lids were enormously swollen and œdematous, so that I could not open them; also, this side of the face, extending as far as the median line of the nose on the inner side and on a level with the upper teeth below and to the left ear posteriorly. There was no redness of face; the swelling pitted on pressure; no discharge from eye. Ophthalmoscopic examination of R. E.: Disc hazy, veins considerably enlarged, arteries somewhat smaller than normal. Examination of urine by picric acid test shows sugar. Roberts' test shows ten grains of sugar to the ounce. I gave him ten grains of potassium acetate every two hours. July 3: The swelling is greatly reduced so that he can hold the lids partly open. The conjunctiva shows marked chemosis; the cornea is normal. To-day the parotid and sublingual glands in the left side are very much enlarged. I ordered him to continue the potassium acetate, also to take one-eighth grain of pilocarpine muriate morning and evening; also seven grains of potassium iodide *ter die.*, and mercurial inunctions morning and evening. Atropine was instilled every three hours. July 3. Ophthalmoscopic examination L. E. has neuritis optica. Disc hazy, its outer half shows slight atrophic cupping and is too pale. The veins greatly enlarged, the arteries fine. He has considerable exophthalmos. L. E., T. + 1. R. E., Tn. The pupil dilates normally to atropia. July 4: The œdema of the face has disappeared. He still has some exophthalmos and chemosis (the conjunctiva has not been red). He is to stop the pilocarpine, but to continue the other medicines. Remote vision, R. E., normal; L. E.$= {}^{4}/_{\mathrm{V}}$. No goitre.

HISTORY.—The patient says that for about ten days before the eye became swollen, he had pain in the small of his back. His work in a livery stable—washing buggies—constantly exposed him to being wet. He never had scarlet fever; an aunt of his died of cancer, but no other relative has had this disease; there was no tuberculosis or scrofulosis in the family; he says, he had syphilis two years ago, but has not had it since (?). He first noticed the swelling of the eye on the morning of July 2; and the previous night he had washed a buggy.

July 14. Vision, R. E.$= {}^{4}/_{\mathrm{IV}}$; L. E.$= {}^{4}/_{\mathrm{IV}}$. No exophthalmos nor œdema. Ophthalmoscopic examination, R. E., retina clear, disc slightly hazy, due to papillitis. Arteries normal, veins enlarged both on the disc and in the stroma retinæ. The disc is too pale and slightly cupped externally. L. E., hazy on inner half from papillitis, outer half too pale and shows atrophic cupping. Retina normal. Arteries normal, veins enlarged. He looks very anæmic. I ordered him to stop diuretics and diaphoretics but to continue the mercury and potassium iodide. I also gave him a tonic of iron, quinine and strychnia.

REMARKS.

After a careful examination of a large amount of ophthalmic literature, I fail to find any case exactly similar to this. We know that exophthalmos and orbital œdema may be caused either by tumors or growths pressing on the ophthalmic vein within the orbit;[1] periostitis about the sphenoidal fissure; thrombosis of ophthalmic vein;[2] gumma pressing on ophthalmic vein within cranium; destruction of sympathetic leading from ganglion of Gasser; aneurism of ophthalmic artery; aneurism of ophthalmic vein;[3] exophthalmic goitre; varicosity of orbital veins;[4] stings of venomous insects; injuries; liver and kidney disease.[5] The rapid diminution of the œdema under the active diuretic and diaphoretic treatment and the absence of any history of insect sting, prove, that this case was one of orbital and facial œdema caused by a transient attack of acute nephritis in a diabetic and syphilitic patient. The œdema of the lids and face had almost disappeared before any anti-syphilitic treatment was given. Just why dropsy should have appeared at this point and not appeared in any other part, I cannot determine. We know that when the kidneys are congested, the engorged venous system frequently relieves itself by effusion into serous cavities, because there is less resistance at these points. The orbit being filled with loose cellular tissues and fat, offers less resistence than the unyielding substance of the brain and hence the predilection of dropsy for this part.

---

[1] Schweigger's Handbook of Ophthalmology.

[2] See case reported by K. J. McKay in Transactions American Ophthalmological Society, 1882.

[3] Galezowski.

[4] Schweigger.

[5] Diseases of the Eye, H. Walton.

SOCIETY PROCEEDINGS.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

May 1894 at Washington, D. C.

[concluded.]

"*The Decreasing Percentage of Myopic Eyes—Through the Optical Correction and Treatment of Ametropia.*"

Dr. S. D. Risley, of Philadelphia, presented in abstract the results of a statistical investigation of the correction of ametropia in all asthenopic eyes applying for relief to himself and colleagues in Philadelphia for twenty years, during which time it had been the almost uniform custom to correct all asthenopic ametropic eyes. He argued that if the claim he had made in 1881, in the deductions from the results of the examination of the school childrens eyes in Philadelphia, viz., that the strain made necessary by the congenital anomalies of refraction, particularly astigmatism, was the essential cause of the pathological states underlying the myopic eye, were true, then the uniform correction of these anomalies in all asthenopic eyes in the community applying for relief, would manifest benificial results in the diminution of both the percentage of myopic eyes and in the grade of myopia found after twenty years of such optical corrections. A careful analysis was made of all the cases of ametropia seen in his own practice since January 1, 1874, and of all distance glasses furnished on the prescriptions of ophthalmic surgeons, by two large optical companies for the same period. The cases of myopia were grouped according to grade of myopia found as shown by the correcting glasses, astigmatism being carefully noted in every case. The twenty years covered by the investigation were then divided into periods. The results were based upon approximately 200,000 eyes. In the private work, where the patients were drawn from the more studious portions of the population, and where the corrections were all made under mydriatics there was found 22.% of myopic refraction, 90.33% of the myopic eyes being astigmatic. In the optician's books, where many were the records of hospital work and doubtless many of the formulæ represented manifest corrections, only 21.6% were for myopic refraction, and of those 60.% were astigmatic. In the first period of years there was found in the private case books 28.43% of myopic refraction which steadily fell through the succeeding periods to 16.78% in the last period. The fall was from 25.40% to 15.2% in the optician's books. Of equal interest were the findings as to the grade of myopia. M. of 10. D or greater had fallen approximately 50.%, *i. é.*, in the number of patients with M. higher than 10.D. A nearly similar fall was noted in the intermediate grades, but in M. of less than 1. D. the percentage increased. The explanation being that under the treatment and optical correction of ametropic, eyes with commencing M., the further progress of the malady had been arrested. A fact which accounted for the great decrease in the number of high grade myopes. The correction of the asthenopic eyes with ametropia, particularly with astigmatism, had prevented the commencement of the myopic distention of the ball, hence the gradually decreasing percentage of M. in the community. It was claimed that observation of individual cases had shown that the myopic eyes were, in many cases certainly, recruited from the hypermetropic eyes through the turnstile of astigmatism, never becoming emmetropic at any stage of their history. This was borne out also by a careful study of the full refraction tables given.

DR. CHAS. HERMAN THOMAS, of Philadelphia, reported "*Three Cases of Strabismus with Anomalous Diplopia.--An Original and an Acquired Fixation Spot in the Same Eye.*" In the cases here presented attention is directed to the existence of two fixation spots in the deviating eye, one the normal macula used in monocular fixation only, and the other an acquired fixation spot to which reference is made by the patient in binocular fixation only. Two were cases of divergent strabismus; the third was a case of convergent squint; operations were performed in all.

In all these cases when either eye was used alone, the seeing eye was directed centrally, *i. e.*, either eye used alone fixed with the macula. On the other hand, when the two eyes were used in conjunction, the diplopia—if it was then artificially produced or shown to exist—was found to relate to the acquired fixation spot. This was particularly true of the two latter cases. In the first the alternating character of the diplopia showed that the patient could refer to either the macula or to the acquired fixation spot.

A false fixation spot in strabismus is denoted by the occurrence of diplopia contrary to the rule (*i. e.*, crossed diplopia associated with convergent squint and *vice versa*), when prisms corrective of the deviation and of sufficient strength to abolish movement under the cover test, are placed before the patients eyes. It will be seen that practical considerations of importance grow out of a recognition of the presence of two such fixation spots in the same eye and which bear upon the operative treatment of squint.

DR. JOSEPH A. WHITE, of Richmond, Va., read a paper entitled, "*The Practical Value of Low Grade Cylinders in Some Cases of Asthenopia.*"

This article was a protest against the literal acceptation of the editorial statement in the *Journal of the American Medical Association*, February 3, 1894, that low grade cylinders had no practical value in asthenopia, and to support his contention the author submitted a statistical table of a hundred successive cases of asthenopia, the trouble in which was due to the annoyance caused by low grade astigmatism, and which were very much improved or absolutely cured by the use of the cylinders for a longer or shorter period, some temporarily and some permanently. The cases were divided by the writer into six classes as follows:

CLASS A —Astigmatism with the rule axis 90° the two eyes differing in refraction, 8 cases.

CLASS B.—Astigmatism with the rule in one eye with axis at 90°; the other with an inclination of from 15° to 40° from the vertical meridian, 13 cases, of which two had compound astigmatism.

CLASS C.—Astigmatism with axis inclined from 15° to 30° from the vertical meridian, 33 cases, 12 of which had compound astigmatism.

CLASS D.—Astigmatism against the rule with axis in horizontal meridian, 20 cases, 5 with compound astigmatism.

Class E.—Astigmatism with axis inclined from 15° to 30° from the horizontal meridian, 18 cases, 2 with compound astigmatism.

CLASS F.—Astigmatism with the rule in one eye, and against the rule in the other eye, 8 cases, 1 with compound astigmatism.

The ages of the cases are as follows:

14	were between	10 and 15	years.
30	" "	15 and 20	"
40	" "	20 and 30	"
14	" "	30 and 40	"
4	" over	40	"

The cylinders prescribed were in 53 cases + 0.25 D. for both eyes; in 18 cases + 0.25 D. for one eye, and + 0.50 D. for the other; in 19 cases + 0.50 D. for both eyes, or + 0.50 D. for one eye and + 0.75 D. for the other. Twenty-two cases applied for treatment of headache, without being able to trace its causation to the eyes; seventy-eight complained of difficulty of vision, eyeache, etc. Six of these had blepharitis, three chronic conjunctivitis, and four spasm of accommodation.

In all cases every precaution was taken against error. Each case was examined carefully with the ophthalmometer and test lenses; the accommodation was then thoroughly paralyzed, an examination by retinoscopy made and the test lenses used again. Any change from the first record was noted. When the accommodation was re-established, the previous examinations were verified, or, any discrepancies reconciled. The muscles were tested and any radical defects treated by orthopædic exercises or operation. Very few of these cases had any marked muscular errors, and most of these disappeared after the glasses had been worn a while. Careful inquiry into the personal and family history of the case was always made and any apparent extrinsic cause for the asthenopia recorded. When necessary, treatment for the same was instituted by Dr. White or the family physician, who was invariably informed of the former's opinion and his reasons for it. No glass was ever prescribed unless it improved distant vision. Such cases were seen again in two weeks, if possible; in this series this was done in a large majority of them, and the othere were heard from.

From one to three cases in each class were reported in full to show the results obtained. In no case was a quarter or half dioptre cylinder in both eyes prescribed *when both eyes were alike*, or the defect *was according to the rule*, with axis in vertical or horizontal meridian; and the author stated that he had never seen a case benefited by such a glass because this kind of astigmatism was strictly physiological. It was only when the two differed, or the axis deviated from the vertical or horizontal meridian, that in his experience such low grade cylinders proved of practical value.

He based his conclusions on the statements of the patients, and asked that if such testimony from reliable individuals was worthless, if the cure and relief of their headache, asthenopia, etc., was imaginary, and the value of the glasses mythical, what evidence are we to accept in proving the efficicacy of any therapeutic measure.

DR. CHARLES A. OLIVER, of Philadelphia, presented a "*Clinical and Microscopical Study of Two Cases of Glaucoma Associated with Intra-Ocular Hæmorrhages.*"

The first case was that of a well-cared for though dissipated man suffering from grave nerve and cardiac disease, who suddenly evidenced a right-sided thrombotic or embolic process in an eye that had been the subject of retinal hæmorrhage and shown signs of increased intra-ocular pressure. Recurrent breakages of the vessel walls of the eye with increasing exacerbations of peri-orbital neuralgia took place. A successful and slowly performed iridectomy with no hæmorrhage, relieved the pressure and pain for two months. An acute attack however necessitated immediate enucleation. Microscopic sections showed all the evidence of disintegration of tissue, especially at the posterior pole of the eye in the deeper layer of the retina, and in the uveal tract, from the presence of disorganizing blood and lymph material. The second case is given because of great similarity of its clinical history and its contrast in result. Here an apparently healthy middle-aged man without any other evidences of gross organic vascular lesion or general disturbance of the secretory or excretory system, gradually developed during the course of three years' time, a comparatively painful blindness in the left eye with an almost complete annihilation of vision on the more neuralgic side. Brought to necessary operation by an acute exacerbation of pain, the procedure (iridectomy) was safely accomplished upon a degenerate, and fortunately, probably but slightly vascular tissue, from which there was but little hæmorrhage. Relieved for several months' time, another attack with its necessary accompaniment of lowered functional power, only appeared as the result of indiscretion. By a similar uncomplicated operation, again the process was checked, care being taken this time to keep the patient's general regimen, diet, etc., under the strictest surveillance. The eye then being quiet and all visible hæmorrhage having been absorbed, the last hope for useful sight was given to him by the extraction of a cataractous and swollen lens. Safely accomplished, with no accident of any nature, central vision was brought to a higher acuity than during the entire time that he was seen. This degree of visual power has been held in an eye whose tonus is seldom, if ever, above normal: an eye, however, that, too, surely is showing the slow, steady and irregular contraction of the field, as seen in the increasing pathological excavation of simple and chronic glaucoma. The position taken in the paper is that from the teachings of this second case, there can be but little doubt that a few rare examples do exist where the visual function may be usefully prolonged for varying periods of time, thus allowing the formulation of the following conclusion, that in some extremely rare cases of glaucoma that is secondary to slight recurrent attacks of intra-ocular hæmorrhage, especially in young and comparatively sthenic subjects, in whom the vascular system is not greatly involved, the organ may be kept for much longer periods of time than ordinary, in a condition of usefulness, by appropriate hygiene and therapeutic measures, care being taken to slowly perform proper operative procedures whenever there is urgent necessity to relieve increased intra-ocular pressure, by rendering patulous the most important outlets for the intra-ocular fluids.

DR CHARLES A. OLIVER, of Philadelphia, gave the resumé of "*Some Additional Studies upon the Clinical Value of Repeated Careful Correction of Refractive Error in Plastic Iritis.*"

Ignoring as he then did, any cases where there were objective evidences of corneal opacity, lenticular haze, or even the faintest visible disturbances in the aqueous or vitreous humors, excluding all instances where there were any perceptible tags of adhesion between the iris and the lens, and limiting the work to those eyes where the pupils were seemingly dilated ad maximum, a number of experimental studies were instituted to determine, if possible, the cause of the metropic increase in two ways.

1. To discover whether there is a forward displacement of the lens. This was shown not to occur objectively in two ways. First, by oblique illumination; and second, by study of the catoptric images.

2. To endeavor to determine clinically whether the index of refraction or whether the actual amount of either the aqueous or the vitreous humor is increased during the inflammatory process. This in measure was shown not to be the case, first by careful and repeated study of objective appearance of successive layers of these two media by both oblique illumination and the ophthalmoscope.

3. To make certain that the temporary increase of the index of refraction in the type of cases here under special consideration, is dependent upon either spastic tonicity of the fibers of the ciliary muscle or congestion with rigidity of the ciliary bodies. This was done by first obtaining the exact corrective lens that was necessary to bring a subnormal vision

to normal, care being taken to choose intelligent patients with but slight refractive error. This done, three instillations of two drops each of strong solutions of either atropine, cocaine and atropine, or eserine were made at three minute intervals, and the ametropia immediately re-examined, when in every case in which the inflammatory process had not absolutely subsided, the use of the cycloplegic reduced the apparent amount of the refractive error (ordinarily one-fourth to three-fourths diopter) whilst the myotic in every instance tried, increased the apparent amount of the ametropia. To recontrol these tests, all of the eyes whilst in the condition of surcharged dosage as it were, were re-submitted to a few of the most important of the objective tests, when in every instance where the mydriatic was used, the lenticular reflexes were shown to be more greatly approximated, whilst in those cases where the myotic was employed, the lenticular reflexes become further separated, so that consequently in every instance of this third variety of study not only was so-called "spastic accommodation" proven, but the supposition of the forward displacement of the lens was in great measure denied, and both real and relative increases of aqueous and vitreous humor confuted.

DR. W. H. WILMER, of Washington, D. C., reported a case of "*Melanotic, Giant Celled, Alveolar Myxo-Sarcoma of the Eyelid.*"

On April 24, 1893, a small tumor was removed from the right lower eyelid of a woman about thirty years old. Its duration was six or eight months. The bulk of the tumor was in front of the tarsal cartilage, and the skin and conjunctiva were perfectly normal. It was invested in an extremely tough fibrous capsule. It is now thirteen months since the growth was removed and there has been no return.

The hardened tumor measured 12 mm. in length, 7 mm. in breadth, and $4^1/_2$ mm. in thickness. The microscope showed the growth to be a melanotic, giant-celled, alveolar myxo-sarcoma. The elements of especial interest were the giant cells, pigment in spots, myxomatous tissue and dense capsule.

Accessible literature presents the histories of thirty-five cases of primary sarcoma of the eyelid. In 12% all four lids were involved. In 16% it was necessary to remove the eye with the tumor. In 16%, all children, death resulted from the disease. In 40% the return of the growth is mentioned; in others the patients were last seen shortly after the operation, and some of the growths reported were themselves recurrent. Forty per cent were spindle-celled, 43% round-celled, 17% mixed, 11% presented myxomatous elements, 20% were melanotic, 14% were encapsulated, 11% were due to traumatism.

DR. I. O. RICHEY read a paper entitled, "*The Halo Symptom in Glaucoma.*"

This paper offered a new explanation of the halo in glaucoma, consistent with the etiology of glaucoma as set forth in his previous papers on the subject, "The Prime Etiological Factor of Glaucoma is Constitutional" (Transactions American Ophthalmological Society, 1892), and "The Disease Process, Glaucoma" (*Amer. Jour. Med. Sci.*, 1893).

Reasoning from the Descartes theory of the encircling lunar halo, accepted by Dr. Thomas Young and Sir Isaac Newton, that it is due to reflection and refraction of light by ice and snow crystals, it claims that the halo of glaucoma is due to the presence of crystals of the urates anterior to the retina and posterior to the iris, probably in the aqueous humor; that the transposition of colors is in accordance with the disposition of rays of light passing through the aperture of a screen, and is strong proof in support of the theory.

"*The Practice Value of the Ophthalmometer.*"

DR. EDWARD JACKSON from a study of the measurements obtained with Javal's ophthalmometer, and subsequently by other methods under full paralysis of accommodation, concluded that the corneal and total astigmatism were identical in about 6% of the usual run of cases of ametropia. The amount of astigmatism alone corresponded in 22% and the direction of the principal meridians in 52% and approximately in 78%. Because of the lack of correspondence between the corneal and total astigmatism, the indications of the instrument cannot be regarded as accurately showing the amount of astigmatism to be corrected by lenses. It must take its place among the approximate tests in the practical working out of ametropia. Among these, the definiteness of its indications and the case and rapidity with which they may be obtained, give it a high place. As an instrument of scientific precision for purposes of original investigation and as a means of practical determining astigmatism in aphakic eyes, it has a more definite and positive value.

DR. W. E. LAMBERT, of New York.—Mr. President, I merely want to cite a case which came under my observation recently to bear out the remarks of Dr. Jackson in regard to the action or inaction of the ophthalmometer; the erratic way in which it seems to perform and the amount of astigmatism shown by it and other methods. This lady of whom I speak had according to Javal, three diopters in the right and in the left one and one-half diopters less with the rule, but she showed one-half diopter in both eyes. The subjective method confirmed this and with this correction the patient's vision was brought up to a proper standard. In each eye there was one and one-half diopters of astigmatism. The peculiar thing was that it should have been apparently corrected by diverting one eye one and one-half diopters. This difference I frequently find by Javal. In my experience a larger number of cases than Dr. Jackson's have varied so much that I have ceased to place any great reliance upon it. On the other hand, Dr. Jackson also mentions that he had found the shadow test very reliable. My own experience has been very satisfactory with this method. I have gotten so that nine cases out of ten, even without the mydriatic are best suited with glasses which I find by the shadow test. Those glasses found by that method I prescribe with perfect satisfaction and without further tests.

DR. SAMUEL D. RISLEY, of Philadelphia.—Mr. President, Before the close of the discussion, I desire to refer to one matter suggested in one of the papers—I think by Dr. Ring—that the astigmatism of one-seventh was found after these tenotomies. I suppose that an increase of astigmatism often occurs after tenotomy of the lateral muscles. I have seen that in cases of strabismus and I have demonstrated it a few times with the ophthalmoscope. So letting up the pressure, so to speak, of these lateral muscles by tenotomy seems to determine some increase in the lateral curvature. I have seen astigmatism of one-half diopter proved by the ophthalmoscope and by subjective demonstrations by the mydriatic increase in one eye from one-half to one and one-half diopters and in another more so. I think that should be looked to after tenotomy.

I should also very much like to discuss, if time permits the statements made in some of the papers regarding anomalous muscle balance. I would like simply the privilege of alluding to a few things here, with the further privilege of writing down later a little more in extense for the transactions. I want to say that in my belief it is one of the errors into which some of us have fallen, this misconception of what is a normal eye. It has seemed to me that the perfect eye of binocular vision is the emmetropic eye with a normal inervation and a normal form of the orbit. Any departure from this is very sure to set up conditions which lead to asthenopia and when we study the frequent anomalies which must determine the form of the orbit in which the eyeball is developed, we must anticipate a priori that there should be normal departures in the eyeball itself. Mathematically considered—taking into consideration the physiological difference between the innervation and the other conditions—mathematically considered in no pair of eyes which depart from the model emmetropic eye, we must either have dim or double sight and it is only because nature had concerted so in those eyes that it enables us to overcome anomalies and departures from the normal standard. Donders long ago pointed out—as long ago as 1846 or 1848—long before the publication of his classical treatise—that there was a very marked difference in the relative range or region of divergence, which he developed so beautifully in his subsequent treatise and where there is a hypermetropic person for example or commencing presbyopia, there must be a disturbance of this normal relation. In the hypermetropic eye the individual has all his life long been learning to accommodate without converging, and has, therefore, required a region through which he can do this successfully and comfortably. When he reaches the point of commencing presbyopia, which in his case will depend upon the degree of his refraction error, in the interests of his vision, we must help him with a convex glass. We at once disturb the relation he has acquired and we therefore find these cases of exophoria. He must learn to unlearn what experience has taught him all his life. We compromise this with him in the work he has done for so many years. Among persons who give manifestation in the presence of hypermetropia are gradually taught by successively stronger convex glasses to acquire a new range ot convergence and accommodation. [This is the uncorrected report —ED.]

The President announced that Dr. W. Dennett, of New York, would exhibit and explain the model of an instrument for determination of prisms.

DR. W. S. DENNETT, of New York showed "*New Mires for Use on the Javal Instrument*," and said: These are the result of an attempt to increase the delicacy of the instrument by the use of a vernier, the two parts of the vernier being put on the upper and lower halves respectively of the mires in common use; the rest of the mire being black. The scales are black lines on white gronnd. The resulting reflection in the cornea is a vernier such as is used on most instruments of precision. The principal divisions mark diopters but the vernier reads tenth diopters. This is very near the limit of possibility for instruments of as low magnifying power as that in common use.

A new lantern is here shown similar to that d scribed in the current number of the "New York Eye and Ear Infirmary Reports, also one with four lamps. The two extra lamps are for the instruments having the large discs with degrees numbered on the edge to be read by reflection from the cornea. This large disc which is now so common is a clumsy and useless encumbrance to an otherwise elegant instrument. One of half the size is quite as good for every day use, and much more convenient.

The Wollaston Prism, by which the doubling is often produced, gives two symetrical images, each having a greenish fringe on the side toward the other, consequently there is no point of precise contact except with monochromatic light, and this is not conveniently obtained.

By using a green background for the mire, the eye is somewhat paralyzed to this color and the adjustment is more precise, but the accuracy with which the estimated center of two vernier lines can be made to coincide is greater and is very little affected by dispersion. The vernier here shown is too fine for easy reading on this instrument, but one reading quarters and estimating eighths would no doubt compare favorably with those in common use.

The President announced that Dr. W. E. Lambert, of New York, would exhibit and explain the use of a Refractometer for Retinoscopy.

DR. W. E. LAMBERT, said: This instrument which I now present to the Society is intended to be used in estimating errors of refraction by skiascopy.

It consist of two superimposed discs, one of which contains 9 convex lenses ranging from +1 D. to +9 D. and 10 concave lenses from —1 D. to —10 D.; the other disc contains .25, .50, .75 and 10 D. convex and concave.

By means of a gear movement operated by a tube and rod, the latter working within the former, both disce can be revolved either independently or together with one hand, thus enabling the examiner to rapidly bring the various lenses in front of the eye piece without changing his position during the examination. This is the special advantage of the instrument and removes the great objection to skiascopy.

On the reverse side of the instrument is an arm carrying the eye piece, which arm can be swung to either side of disc, thus adapting eye piece to right or left eye. The arm supports in front a graduated cell, in which a cylindrical lens can be placed at any desired axis, or a slide containing six cylindrical lenses of different foci, which are varied by raising or lowering the slide while the desired axis is obtained by rotating the cell and and is indicated by a pointer on the scale.

In using the instrument in cases of astigmatism, first estimate the refraction of the two principal meridians employing only the spherical lenses; then placing the cylinder thus indicated in the cell at the proper axis, repeat the test to insure accuracy. The advantage of using a slide with several cylinders is that the strength of some can be easily increased or diminished should the first estimate of the astigmatism be incorrect.

DR. B. ALEXANDER RANDALL, of Philadelphia.—Mr. President, I would like to say a word with regard to retinoscopy with the plain mirror, not from one meter but from three or four. It is unquestionable better for many reasons. It is more delicate and I can positively assert that for a large proportion of instances it can clearly show differences of one-fourth or even one-tenth diopters. In favorable cases I can easily distinguish between .65 and .75, can even discern that anomally between these two. It does seem to me that retinoscopy with a plain mirror, from three or four or even six meters is a method which ought to have more trial than it has received. If the source of light is ample, and the plain mirror used has a sufficient sight hole, it is perfectly possible to see the movements of the shadows at the longer distance so as to be cognizant of everything, and to get the increased accuracy. It is a mistake to use this which is a crucial test when you want to do your coarse focussing, but for a fine focussing arrangement there is nothing approaching this method in satisfaction.

DR. W. E. LAMBERT, of New York.—Is that practical with a small pupil?

DR. RANDALL.—It is with a pupil of three millimeters. In unfavorable cases or conditions one may however be forced up to the nearer test distance.

DR. W. E. LAMBERT, of New York.—I merely want to say a word in reply to Dr. Randall's remark. It is not my practice to use this instrument at three or four meters. It is a mistake that the instrument which I have here exhibited was not made longer. I notice the books speak of one meter as being the proper distance. It has been my practice for some time back to get off as far as I could with a plain mirror.

DR. SWAN M. BURNETT of Washington.—Mr. President, I do not now know how many years ago it is since I showed the first instrument of the kind described in this very room. It was not so complicated as this but I have used it with perfect satisfaction for six or seven years. Since that time I think that the complications connected with this one are rather against its success. If, as Dr. Randall says, for the more accurate results you must get off at a greater distance than one meter and have a number of glasses in front, I think the rod no advantage.

I cannot agree with Dr. Randall as to what he calls retinoscopy, but which is not retinoscopy at all. The gentlemen present need not be alarmed. It is our usual fight over this proposition.

Undoubtedly you can tell the difference in the reversal movement very well, even for a quarter diopter or less in many cases, but there are very many others in which that does not give you the correct refraction. I called the attention of the Society three years ago to what I have called the internal shadow phenomena in which the findings cannot be relied upon. The refractive media must be clear and uniform before you can get a movement that gives the exact refraction of the eye. To claim that you can get within one-fourth or even one-half diopter of the exact refraction is, I think, as much of a mistake as to say, we can get the total astigmatism with the ophthalmometer. We must not claim that for skiascopy any more than we claim it for the ophthalmometer.

DR. C. F. GLARK, of Columbus, Ohio, read the next paper entitled, "*A Case of Binocular Coloboma of the Lens Without Coloboma of the Iris or Choroid and with Vision Retained.*

DR. ALBERT C. HEYL, of Philadelphia, Pa.—I would like to refer to two points in connection with this subject. One is, that clinically we must distinguish between two varieties of congenital defects of the crystalline lens which probably belong to the same classification. In the one the lens is symmetrical in shape but small in size. That is not true coloboma of the lens as ordinarily described. The second is that in which there is a lack of symmetry in the lens as mentioned in Dr. Clark's case. This is coloboma lentis. The other point I desire to raise is with reference to pathology. I would like to state Becker's view with reference to this matter as his work on the pathology of the lens is not very accessible. He does not believe in the formation of cells as described by von Becker's *Archiv. f. Ophth.*, 13, ix. He believes the cases of coloboma lentis are due to the imperfect development of the zonula, or possibly its absence at a given point. Thus it happens in the process of development that the lens is pulled out of shape. I think that is, perhaps, the latest view advanced in connection with the subject. It has certain difficulties connected with it which cannot now be discussed in detail.

Dr. C. F. Clark, of Columbus, Ohio.—Mr. President, there are two cases reported—I think they are Dr. Sissel's—in which the suspensory ligament was detected. One was a case which occurred in Fuch's clinic.

Dr. Albert C. Heyl, of Philadelphia, Pa.—It has long been known that the vessels of the brain tissue are inclosed in tubular sheaths so that the vessels lie in a certain amount of lymph. In 1865 His detected these peri-vascular spaces in the retina and later Schwalbe was enabled to inject these spaces about the retinal veins and capillaries. I might give here a description of a rupture of the lymph sheath of a retinal vein which occurred and allowed the latter to protrude through into the vitreous. The case was that of a woman who eighteen months before had suffered defective sight after pregnancy. Albuminuria had occurred and when she presented herself to me the vision was very defective, the media were clear and a few signs such as we see in albuminuric retinitis were present. Two months ago the patient came again with the statement that on several occasions vision had been very much obscured, but had cleared up but two weeks before coming, had become obscured again, and had remained so. In the left eye there was a floating mass in the vitreous, directly back of the lens, completely obscuring the fundus and in the other eye the appearances which I now demonstrate. I have here a small drawing and on a larger one I will demonstrate to the Society the same thing. You notice in the first place this white object in front here (indicating). The refraction of the disc was ametropic. The refraction of this white object was 4.5 D.; it was a connective tissue growth in the vitreous. Apparently it is made up of two portions. This portion is flat and parallel to the corneal basis. At the last observation this portion had largely disappeared so that evidently it was one long extended membranous object in the vitreous, simply folded on itself at an angle. Here is the vein that runs up normally into the upper inner retinal quadrant. It makes at this point a bend and a loop and the refraction of the apex of this loop was about 4 5 D. so that the loop stood out in the vitreous. Then it made a turn and came down to the retina and ran along a certain distance, then made another loop into the vitreous again, the refraction of this loop being 3.5 D., a little less than the other. Then it made a sinuous curve in the retina. You see between these little loops in the retina white objects about the caliber of a retinal vessel. That, no doubt, was the original track of this vessel. Under certain conditions, a rupture of the lymph sheath had occurred and these vessel loops had been forced out into the vitreous. I have seen two or three times in the course of my experience conditions resembling that, where the vessel has been in the retina and a white object resembling a retinal vessel was apparent, but I have never been able to explain it. But the fact that these loops had extended into the vitreous explains the whole thing. This should have been the original length of the vessel but under the influence of strong intra-venous tension the vessel had been forced through the vessel sheath leaving the remnant in the retina. This remnant lost its clearness and transparency and became white. Two remarks with reference to this rare phenomenon. One is, that the cause of this condition is no doubt the strong intra-venous tension in a vessel, causing it to be forced through the vessel-sheath, and in addition to that for that alone could not have induced it, that the sheath must have been diseased, because we often see tortuosities in retinal vessels sufficient to form loops without producing conditions of this kind. The sheath, therefore, must have been in a more or less diseased condition. The other thing is the association of this connective tissue growth which is a very rare thing with this lesion. I do not think that this was a coincidence simply; I believe that there must have been some cause in addition to this. I think it was Hermann Pagenstecher who first declared the idea that connective tissue formations in the vitreous were not developed from the stroma but from leucocytes which were developed into connective tissue. I recall an experiment of Schwalbe in which he found portions of vitreous introduced into the lymph sac of a frog's back had been found after a time densely infiltrated with leucocytes from the lymph. I think that these loops of vessels, being forcibly projected into the vitreous, had opened a pathway for the ingress of leucocytes, that those had streamed toward the optic disc, and these leucocytes have developed into the formation of this connective tissue growth. Twenty years ago a similar tissue growth was represented before the Society by Dr. Strawbridge. A picture of this may be found in the reports of that period.

The next paper announced was "*Colloid Disease in the Macular Region, Analogous in Appearance to the So-called 'Drusen' in the Nerve Head.*" (No abstract).

DR. CHARLES W. KOLLOCK, of Charleston, S. C., read the next paper entitled, "*Atrophy of the Optic Nerve.*" (No abstract).

DR. LUCIEN HOWE, of Buffalo, N. Y,, read the next paper entitled, "*Three cases of Ectropia Uveæ.*" (No abstract).

The next paper announced was "*Exhibition of Water Color Sketch of a case of Embolism of the Central Artery of Retina,*" occurring in practice of Dr. Harlan. (No abstract).

The next paper announced was "*Diplopia Produced by Fall on the Head,*" by Dr. Kollock.

DR. H. KNAPP, of. New York.—Mr. President, did the paralysis appear to be oblique?

DR. KOLLOCK.—My report is imperfect for being away from home I did not have time to test the case as accurately as I could have done. I should also have examined the other muscles.

DR. P. A. CALLAN, of New York, read the next paper by title, "*A Double case of Neuro-Paralytic Keratitis Lasting Ten Years.*" (No abstract).

DR. J. A. LIPPENCOTT, of Pittsburgh, Pa., read the next paper entitled, "*Entropion, Probably Congenital, Complicated with Ulcers of Cornea, with Operation;* Recovery." (No abstract).

DR. F. M. WILSON exhibited a "Portable Perimeter."

DR. C. A. OLIVER, of Philadelphia, exhibited an "Artificial Eye;" also a "Special Sterilizer."

Adjourned.

SELECTIONS.

A CASE OF QUININE AMAUROSIS, WITH REMARKS.[1]

BY JOHN HERBERT CLAIBORNE, M.D.,

Adjunct Professor of Ophthalmology in the New York Polynlinic.

On December 16, 1891, I saw Mr. W. A. C. for the first time. He said he was totally blind and had been so for a week. The case was first seen by my father, Dr. J. H. Claiborne, Sr., of Petersburg, Va., who sent me the following note:

"I was called to see Mr. C. on December 8, at 8 A.M. Found him in bed, semi-comatose, aroused with difficulty; would only say 'give me water,' and relapse into same condition. Pulse 100°, full and slow. Respiration slow. Skin moist and warm. Pupils dilated the to utmost and not at all responsive to light. No resistance or evidence of sensibility on pulling the lids apart. No history of the case obtainable, except that he retired the night before in usual health. I prescribed a placebo. During the day I got a specimen of urine. I found some albumin and one cast. Nothing to justify the gravity of the symptoms. On December 9, he could be aroused more easily. Evidently the deafness was growing better, but no intelligent reply to inquiries and no improvement in the eyes. He became restless and unruly during the day and had to be put under restraint. I gave a few doses of morphine, bromide of potassium, and cannabis indica. He soon became more quiet, slept the night through and awakened in the morning with hearing and intelligence restored, but totally blind. I suspected some effusion at the base of the brain and put him on corrosive sublimate and tincture of cinchona, and advised him to see a specialist."

---

[1] Read before the New York County Medical Association, April 16, 1894.

I therefore saw Mr. C. eight days after he was taken ill. For about two months and a half he had felt badly in York. He then went to Richmond, Va., where he remained a week. During his stay he took on an average fifteen or twenty grains of quinine a day. This relieved him temporarily, but after he removed to Petersburg his trouble returned and he worked hard for several days opening his stock in a damp shop. He had been sleeping badly the entire time, and finally made up his mind to rest well one night. With this in view he poured the palm of his hand nearly full of two-grain pills of quinine and took them at once before leaving the store. He went home and got to bed early; after that, he remembered nothing till he awoke several days afterward perfectly blind.

When I saw Mr. C. for the first time I found him with absolutely no light-perception in either eye, either for daylight or for the strong focus of a biconvex lens. He complained, however, of seeing many-colored figures that would change their hue. The sensation of red prevailed. The pupils were fixed and moderately dilated, somewhat irregularly, indeed, the larger axis of the pupils being horizontal. The optic discs of the two eyes were pearl white and the vessels much smaller than in health, although not so small as they subsequently became. The eyes occupied the position of divergence, and the patient had the typical stare of amaurosis. The sclera seemed unnaturally white, so that the patient presented a very uncanny appearance. I diagnosticated quinine amaurosis immediately and put him upon potassium iodide in saturated solution. I explained the nature of the case to him and gave a guarded prognosis. He insisted on keeping up some form of treatment although I told him that nothing would assist Nature in restoring vision.

I increased the dose up to fifty grains three times a day until

December 21, when he exhibited a genuine case of double iritis plastica, slight in intensity, however. The pupils were now somewhat irregular and contracted. The iritis slowly improved; by December 31 the inflammation of the iris was entirely gone and the pupils were then moderately widely dilated by the atropine that had been used. On this date the patient said he could recognize the plates and cups at breakfast by a circle of light.

On December 28, I placed him again upon the bichloride of mercury and tincture of cinchona. He laid stress upon the fact that he could see things only by reflected light. Any intense light seemed to blind him completely. He could see a chair in my office when the light was diminished, but could not make it out when the full daylight was allowed to enter. He saw even better by reflected gaslight than by reflected daylight. He could pick up a piece of paper more readily by gaslight than by daylight. He improved so far as to see dimly objects even in another room, and one day when the sky was overcast he said he had read the signs in the street from the car window in coming to my office. During this entire time, although he possessed this much vision for reflected objects, he could not perceive the light of an Argand burner when focused entirely into the pupil.

At the end of three months, without further improvement, he removed to the Massachusetts coast. During his stay there —several months—he contracted "pink eye," from which he recovered without further distress.

I saw Mr. C. twelve months after his first appearance in my office. His vision then consisted in the ability to occasionally see dim objects at a distance. He had no vision that was serviceable to him for employment. The optic nerves were then dead-white, and the blood-vessels in the two discs had become mere threads that could scarcely be traced after leaving the disc—in fact, a typical picture of quinine atrophy in in the most advanced degree.

It is worthy of note that under the treatment of bichloride and cinchona he fattened so much that he could hardly get into his clothes. His appetite was enormous at the same time. Vision was about the same.

Dr. Knapp saw the patient in consultation on December 23, 1893, and concurred with me in the diagnosis of quinine amaurosis.

I myself have not seen the patient in twelve months. At his last visit to my office I found his condition the same as formerly. He could see indistinctly striking objects by diffused light, but not when looking directly at them. His pheric vision seemed to be better than the central, and even that appeared to be fickle.

Dr. Knapp saw the patient on October 12, 1893, and kindly permits me to transcribe his notes.

"In the right eye he saw movements of the hand at six feet. With a candle the field of vision was elliptical. It was limited by five degrees beyond the fixation point upward and toward the nose, and extended as far as twenty degrees downward and toward the temple, producing an elliptical field. The vessels were very small.

"In the left eye he had perception of light; could recognize a candle at twenty feet. Vessels were almost obliterated; pupils irresponsive."

The deafness that accompanies quinine amaurosis had evidently disappeared when I saw Mr. C., he did not complain of any, and certainly heard ordinary conversation with ease. I found both membrane tympani slightly drawn in and a trifle pale. Dr. Knapp found at the first examination that he could hear a watch in each ear at half an inch. There was no tinnitus when I saw him, nor was any observed by Dr. Knapp. There was some improvement in hearing after inflation. It is entirely consistent with the history of such cases that the deafness and tinnitus disappear.

The amount of quinine that may produce amaurosis is distinctly indeterminate, and doubtless, as Atkinson (*Journal of the American Medical Association*, September 28, 1889) says, depends largely on idiosyncrasy. H. C. Wood (quoted by Atkinson) saw temporary blindness result from a dose of twelve grains. As much as an ounce has been given with the result of temporary blindness and stupor followed by recovery (Taussig, *Medical Times*, April 26, 1864, quoted by Atkinson). Barlow (quoted by Atkinson) narrates a case of a lady with "severe congestive fever, who took forty grains of sulphate of quinine every two hours for ten doses," making four hundred grains. There was no injurious effect from the quinine, and she made a good recovery from the fever. Dr. Emile T. Sabal, of Jacksonville, Fla., narrated to me a case in which twenty grains of the sulphate administered to a young lady produced temporary total blindness. I myself have known a negro woman with tertian ague to take sixty grains at once by mistake and suffer no inconvenience of sight and hearing. There was not even any tinnitus in this case. It would be natural to suppose that physicians who live in the Southern States of our country would see many cases of quinine amaurosis. There is reason to suppose it is rarely seen here. Dr. Sabal, referred to above, has only seen one case in an experience of thirty years in Florida. My father, Dr. Claiborne, in an experience of forty years in tide-water Virginia, has seen only one case—the one reported herewith. It will be observed that the patient was not a native of the section, but was from New York. It is not improbable that a tolerance for quinine is established by a long sojourn in malarial regions. I believe the opposite also to be probable, that one born and raised in a malarial country may lose his tolerance for quinine by sojourn in a colder country.

In 1881 Dr. Emil Gruening (*Archives of Ophthalmology*, B. x., p. 81), compiled thirteen cases of quinine amaurosis, the first being that of Giacomini, quoted by Binz. Since that time the literature has been swelled considerably. Atkinson, in the *Journal of the American Medical Association*, quoted above, recapitulates the histories of forty-nine cases and follows with a masterly review of them. Dr. Alice Wakefield, in the *N. Y. Polyclinic*, August, 1893, recites a case of quinine amaurosis, in which reference is made to Atkinson's compilation. She states that as many as fifty-five cases have been reported. Pischl, in the *Medical News*, July 29, 1893, adds a case. This, together with Dr. Wakefield's and mine, make fifty-eight. There are probably more.

The symptoms and signs of quinine amaurosis are marked and fairly constant. They are blindness, total or incomplete, which usually comes on suddenly; a dead, pearl-like pallor of the optic nerve, strikingly simulating the pallor of atrophy, accompanied by greatly contracted retinal vessels, both arteries and veins, with occasionally total disappearance of an artery or a vein; concentric or elliptical contraction (Knapp) of the field of vision. The long axis of the field is usually horizontal or slightly downward or outward. Dilatation of the pupils, which are irresponsive to light; partial color blindness in the field of vision. The color sense usually returns entirely. In my case there was distinct divergence of the visual lines. This was also observed by Diez, Browne, and Knapp. Roosa remarked nystagmus in a case of his; Knapp also. Dickinson found congestion of the retinal and choroidal vessels and a distinct tumefaction of the disc. I found the edges of the optic disc in one eye slightly hazy.

In a communication presented to the College of Physicians and Surgeons, Philadelphia, November, 1890, Dr. G. E. de Schweinitz gave the results of some experiments made on dogs for the purpose of determining the lesion in quinine blindness. This was followed by a paper in 1891 in the "American Ophthalmological Society Transactions." Similar work in this direction has been done by H. Bruner, "Ueber Chinin-Amaurosis," Zuerich, 1882. An extract of this work may be found in Nagel's *Jahresbericht.* (I am indebted to Dr. de Schweinitz for this reference). Bruner's work and de Schweinitz, are quite similar, but the latter's is more exhaustive and in reality furnishes all the light we have upon the lesion in quinine amaurosis.

De Schweinitz gave quinine hypodermically to dogs in quantities of from one to four grains to the pound, with the result of producing blindness in from three to fourteen hours. The effect of the drug was obtained more readily by administering the bimuriate of quinine with the carbamide of urea. The symptoms of vomiting, staggering, and convulsions attended the blindness, with two exceptions—in these there were no symptoms attending the blindness.

The ophthalmoscopic picture was similar in every case to that in the human subject. The pupils in all cases were immovably dilated. In one case there was thrombosis of the central vein. Examination with the microscope showed that toxic doses of quinine could produce thrombosis of the central vein, and that neither neuritis nor atrophy, in the true sense of the word, was present in the animal longest blind (nearly a month), but that there appeared to be a species of œdema between the optic nerve and chiasm.

De Schweinitz then undertook additional experiments to settle four points:

1. Whether blindness could be produced in dogs by other salts than those used
2. Whether the prolongation of quinine amaurosis would produce true atrophy.
3. Whether the production of thrombosis or embolism is to be expected in severe cases.
4. Whether the apparent degeneration of the cells of the cuneus found in the first experiments was the result of the hardening process or due to true lesion from the drug.

His subsequent experiments showed that blindness could be produced effectively by other salts of quinine, dissolved with the aid of tartaric acid or dilute hydrochloric acid.

In regard to the second proposition, he proved by microscopic examination that prolonged quinine blindness caused a true atrophy of the optic nerve, chiasm, and tracts.

In regard to the third proposition it was shown that thrombosis of the central vessels may be expected in severe cases.

He found, however, that the degeneration of the cells of the cuneus was due to the hardening process and not to the drug.

Let it be remembered that in the case I herewith report there was no thrombosis of any of the vessels, although the ultimate result shows the case to be the most severe on record.

From the study of this subject the following conclusions may be drawn:

1. Quinine in toxic doses may produce blindness.
2. The toxic dose is distinctly indeterminate.
3. The duration of the amaurosis varies largely.
4. The field of vision remains contracted.
5. Central vision usually returns to the normal.
6. There is color blindness at first; the color perception is ultimately within the central field.
7. The ophthalmoscopic picture is that of white atrophy.
8. Experiments on dogs show that there is atrophy of the entire optic tract.
9. The same experiments show that the cells of the cuneus are probably not affected.
10. Treatment is of no avail.—*N. Y. Medical Journal.*

THE TREATMENT OF PTERYGIA WITH THE GALVANO-CAUTERY.[1]

BY ARTHUR G. HOBBS, M.D., ATLANTA, GA.

I shall not presume that it is necessary in describing this method of operating on pterygia to even enumerate the many already in vogue. I should rather ask your forbearance for merely suggesting to you that yet another method is to be added to the list already, perhaps, too long; still it may be true that each of these operations has served its purpose in turn in the process of evolution. Since it is the cardinal point in making a pterygium operation to prevent two raw surfaces from remaining in apposition after the operation, which necessarily results in the relapses which we too frequently use, why not then convert each of the raw surfaces into an eschar at once to avoid such failures, provided we are able to demonstrate practically that this means will bring about that desired result?

---

[1] Read before the Georgia Medical Association, April, 1894.

For some years the galvano-cautery point has been resorted to in corneal ulcers, particularly in those indolent and intractable ulcers which have refused to yield to other methods of treatment. It was suggested to me a few years ago, after seeing some of the beautiful results of the cautery when applied to ulcers of the cornea, that it could, at least, produce no bad results if properly applied to the neck of a pterygium for the purpose of cutting off the nutrition of its corneal apex. I hoped that it would prove a better means of severing the arterial supply to the apex as it crossed the sclero-corneal junction. This object is generally attained by the use of the knife, and various methods have been resorted to to accomplish the purpose. The failures in pterygium operations are usually due to the resulting re-establishment of the arterial circulation, and when this occurs the desired end of the operation fails in proportion to the number of the re established vessels. The great vascularity of a pterygium, with its vessels crossing over the sclero-corneal line to supply its apex on the cornea, renders it difficult to permanently sever all the arteries by a clean cut with the knife; hence, perhaps, a score of different methods of knife and scissor operations have been resorted to by different operators to accomplish this end.

Each operator aims at one end primarily, and that is to completely cut off all the blood supply from the corneal apex. Secondarily, his desire is to destroy as little conjunctiva as possible. When the first end is attained the corneal part of the pterygium has lost its direct nutrition and can then only share with the cornea proper for its sustenance, which is indirect, or by imbibition. As this meager supply proves insufficient atrophy results, and the partial, or almost complete, obliteration after a time will depend upon the activity of the absorbents. For this reason the best results are obtained in younger subjects in which, as a rule, the lymphatics are more active, as is also the contractility of the arterial coats.

In many cases when the knife is resorted to a secondary pterygium results, in which sufficient nutrition is re-established to the apex to perpetuate the corneal haziness and to allow it even beyond its apparent margin to greatly interfere with vision. When the cautery section is well made I have not seen these secondary results that are often so difficult to prevent by a clean cut with the knife or scissors. In some cases, however, it may be best to combine the methods of operating, as I have done in two cases not included in this report. These two pterygia were extremely vascular; hence I first used the knife in the usual way, and then seared the divided edges with the cautery blade to prevent the secondary results.

The fine pointed cautery blade, heated with a battery that can be perfectly gauged and always relied on, is applied horizontally to the narrowest portion of the growth, which is near the sclero-corneal line; the touch is made at the moment white heat is reached and should be almost instantaneous and re-applied as quickly, if the tissues are not at first completely severed. If the growth is not adherent to the sclera and corneal margin, it is best to grasp it with small forceps and slightly raise it from the sclera. When the forceps are used it is easier to be certain that the cautery has made a complete section of all the hypertrophied and over-vascular conjunctival tissue.

When the corneal head is large and protruding, it is advisable to make a cautery application in the same manner as in applying it to a corneal ulcer. In both cases the resulting cicatrix is less—it is more transparent. This is not altogether an unknown fact, but one that has seemed never to have been brought out as prominently as its importance would suggest. For this reason one may be tempted often to resort to the cautery to reduce a large pterygium apex or a corneal ulcer, for the purpose alone of attaining this corneal transparency. The resulting eschar so completely severs the vascular connection, leaving no raw surfaces in apposition, that a re-established circulation is practically impossible; this cannot be said when the knife or scissors have been used. In case the redundancy of tissue at the point of section should seem to require reduction, the scleral end of the section may be turned under and a transverse suture introduced.

I have made this operation fourteen times, and would have made it half as many more times during the last two years, but for that decided objection to the cautery which we so often meet with and are bound to respect. This operation is more quickly performed; it is followed by no bleeding; it leaves no ecchymosis; the wound heals more rapidly; there is less pain during and after its performance; it requires no bandages and the corneal haziness around the apex is less.

A weak solution of cocaine, about a two per cent, is first dropped into the conjunctival sac, then after about five minutes a stronger solution, about a ten per cent., is applied at intervals, locally, by means of a small cotton probe, for five minutes more; in the meantime the lids are held open. By this means the toxic effects are avoided except in those subjects that are unusually susceptible to cocaine. In using cocaine in this latter strength, I try to avoid as much as possible, by the position of the patient, its contact with the cornea. It is now a well-known fact that when used in this strength, or even when much weaker, that this drug is disastrous to an abraded cornea, if long continued.

The kind of galvano-cautery apparatus, the ease of its manipulation, the size of its blade, the confidence of the hand that presses the button, the requisite degree of heat, which should be gauged by the turn of the screw, are some of the necessary factors in this seemingly simple, yet delicate, little operation, whether it be made to a corneal ulcer or to the neck of a pterygium. The only galvano-cautery apparatus in my knowledge that I would now be willing to trust for these purposes is the "Transformer" of the alternating current of fifty-two volts.

I am now using, in my consultation rooms, the first two of these little instruments made. I described the various uses and advantages of this "Transformer" in a paper read before the Pan-American Congress last fall. So far as I know, the galvano-cautery has not hitherto been used as a means of cutting off the corneal apex of pterygium.—*Atlantic Medical and Surgical Journal.*

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. SEPTEMBER, 1894. No. 9.

ORIGINAL ARTICLES.

NOTE ON LID PRESSURE AS A CAUSE OF ASTIGMATISM.

BY LUCIEN HOWE, OF BUFFALO, N. Y.

It has long been known that the radii of curvature of the cornea in the vertical meridian, are, as a rule shorter than those in the horizontal meridian, and the cause of that has, in general, been attributed to the pressure of the upper and lower lids. As a theory this has held its place in text-books, but until recently there have been few, if any, definite observations to substantiate it. Bull,[1] of Paris, has accurately described the changes which it is possible to produce in the cornea, by means of forcible lid pressure, and the degree of that change is surprising to one who has not had his attention called to the experiment. By extraordinary pressure continued as long as consistent with comfort, as much as nine dioptries of astigmatism could be produced, that amount being measured by the ophthalmometer. The ability to alter thus the form of the cornea by forcible lid pressure undoubtedly varies with individuals. Nor is this to be wondered at, when we remember the various factors involved in this act, namely, the strength of the orbicularis, or the prominence of the cornea, or other peculiarities of the individual. I have endeavored to repeat the observations of Bull on my own cornea, but found that the fibers of the orbicularis were not sufficiently strong to produce anything like so decided a difference in the curvatures, although I have seen an approach to that in one or two other persons. In the excellent article referred to, Bull mentions the fact of a lid pressure in the case of two or three artists, because, as he observes, the habit which artists have of pinching the lids together—making "clignement"—would be apt to produce a certain amount of astigmatism. The suggestion has seemed to me an excellent one, and at first the statement appeared to be easy of verification or refutation. For nearly every one who has been in practice for twenty years can turn to his own record of cases and find there a number of persons of almost any given occupation. But on consideration it will be apparent that such cases are not suitable ones to be taken into account in such connection, for the fact of their having applied for relief is prima facie evidence of imperfect vision, and the object in such an inquiry is to obtain the amount of astigmatism among those who consider their eyes practically perfect for the work which they have to do.

---

[1] Des Consequences optiques et pathologiques du clignement des Paupières.

Some difficulty was therefore experienced in obtaining the necessary data, for the reason that artists are apt to imagine that imperfect vision would imply an imperfect representation, on their part, of the objects which it was their aim to depict. But many assented without hesitation, and the tests were made as accurately as possible.

It will be remembered from the first, of course, that the eyes of most persons, no matter what their occupation may be, are astigmatic to a certain extent. One of the most instructive studies in this direction was made by Roosa and the result presented in an article "On the Prevalence of Corneal Astigmatism in Eyes with Normal Acuity of Vision and Without

Asthenopia." With the assistance of Dr. Deynard he made measurements of the corneal astigmatism in each eye of one hundred persons. Among those were physicians, students, dressmakers, clerks, tradesmen and workmen of various kinds and classes, none of whom suspected that their eyes were not normal in every respect. Among these two hundred eyes, eighteen were found by the ophthalmoscope to be emmetropic. In eighteen, also, the curvature of the cornea was seen to be normal as measured with the ophthalmometer, and only two eyes in the whole list were free from defect as shown by both ophthalmoscope and ophthalmometer together. The average amount of astigmatism existing in all was .67 of a dioptry.

With any such imperfection of the eye of persons with ordinary occupations, it is not surprising that artists should have at least their share of ametropia. It is well known that the artists pinch their lids together when they stand at a distance from the easel, attempting thus to get the effect of distance, as it is called; but really they pinch the lids together and produce a certain amount of astigmatism, temporary or permanent.

Thus far I have been able to make a list of thirty-three artists, or sixty-six eyes, finding in them that the average amount of astigmatism present was .905 dioptries.

If lid pressure were the only element in the production of astigmatism, we would naturally expect that the radius of curvature in the vertical meridian would be shorter than the radius of the horizontal meridian, and that the axes of the astigmatism would be exactly vertical and horizontal. The numerous exceptions to this rule are facts of every-day experience. So is it also with artists; for while as a rule, this radius of curvature vertically was less than the other and more frequently so than with the vast majority of other persons, still examples are by no means rare in which artists have the axes of least curvature at a considerable angle from the vertical or even where the positions of the two axes are reversed. The element of time in the production of astigmatism by lid pressure is an important one. I am quite sure that those who have been accustomed to pinch the lids together for a considerable number of years have almost without exception produced an irregularity in the form of the cornea. At least this is shown among the sixty-six eyes here examined and the degree of the astigmatism bears such a constant relation to the length of time during which the habit of lid pressure has existed that they appear to stand in the relation of cause and effect. The examination of twenty-two of these artists gave a much greater average than is here presented, but the last who were added to the list were younger artists and those who had practiced lid pressure to a much less degree, and average amount of ametropia was reduced to the degree here given.

I am aware that generalizations are hardly warranted from so small an amount of data, but while no positive conclusions can be drawn from these, the inferences are so strong as to warrant their being presented.

ALBUMINURIC RETINITIS.

BY C. M. HOBBY, M.D., IOWA CITY, IOWA.

In calling attention to puerperal albuminuric retinitis, Dr. Culbertson has rendered a service to the profession which should be reciprocated by a general contribution of experiences with this condition. There are many unsolved problems concerning retinitis albuminurica, and its relations to child-bearing, and a thorough revision of the whole subject is desirable. Blindness undoubtedly occurs from uræmic poisoning without tangible ophthalmoscopic appearances. There is a relation between retinitis albuminurica and ecclampsia; this is so marked that exudation is found in the retina of thirty per cent. of cases of puerperal ecclampsia. In Dewee's "System of Midwifery," tenth edition, eight cases of puerperal convulsions are reported, in six disturbance of vision was noted, and four correspond in symptomatology with retinitis albuminurica.

The pathology of the so-called "retinitis albuminurica" needs further study. How far can we consider its deposits as inflammatory exudations? How much of the impairment of vision is due to the exudative processes and how much to toxæmia? Does not urea, or whatever is the retained excrement in uræmic poisoning, produce effects analogous to those produced by quinine, salicylic acid, iodoform and other known and unknown agents?

I append two cases both ecclamptic, which have come under my personal observation.

Case I.—December 26, 1881. Mrs. M. S., aged 39; mother of six children, states that two years ago while pregnant she noticed gradual and finally complete failure of vision, without other manifestations that she could recall, except that the left eye was the worst. From this she in great part recovered after childbirth, which was without incident, and she was able to attend to household affairs as well as ever. One week ago, being, as she supposed, in the fourth month of pregnancy, she again noticed failure of vision of both eyes. On examination she was barely able to count fingers with the left eye at six inches; the right eye giving $^{16}/_{\text{LXIV}}$. The ophthalmoscope showed the characteristic appearances of retinitis albuminurica and the urine was loaded with albumin. One week later the vision of the right eye had dropped to $^{6}/_{\text{CC}}$. Energetic advice to terminate the pregnancy was rejected, and she was allowed to go to full term without treatment; she then developed convulsions and died in a convulsion after the forcible delivery of a dead child.

CASE II.—May 9, 1894. Mrs. V,, aged 43. Mother of seven children, with no previous history of serious illness or of albuminuric symptoms, developed convulsions during confinement seven weeks ago. She was forcibly delivered of a living child and upon return to consciousness discovered that she was blind; the blindness was attributed by her medical attendant to retinitis albuminurica. Improvement, slow but continuous, followed up to the time of the examination, when O. S. S$=^{20}/_{\text{LXX}}$ and O. D. S$=^{20}/_{\text{L}}$. Ophthalmoscopic examination showed the characteristic lesions of retinitis albuminurica. The urine was scanty, of low specific gravity, but contained no albumen. During the first week after examination the mean quantity for twenty-four hours was twenty-seven ounces; a quantitative examination for urea gave under three hundred grains. Two months later the quantity passed was forty-one ounces (mean of a week), containing over four hundred and fifty grains of urea. The vision improved slowly, the exudate spots grew smaller, many disappeared entirely, and the vision was on July 31, 1894, O. S. S$=^{20}/_{\text{XXX}}$; O. D. S$=^{20}/_{\text{XL}}$.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, MAY 3, 1894.

D. ARGYLL ROBERTSON, M.D., F.R.S.E., President, in the Chair.

ON PERIODICAL TESTING OF EYESIGHT IN SCHOOLS.

MR. PRIESTLY SMITH read a paper on this subject. Authorities were agreed that advantage would accrue from an annual testing of the eyesight of school children, and several commissions had spoken to this effect, and formulated definite proposals. Hitherto no considerable advance had been made towards this end, for the proposals usually put forward had been that the refraction of every scholar should be ascertained once a year by the school doctor. It would be a long time before every school had its school doctor and every school doctor was an efficient oculist. The necessities of the case could be met more easily, and would, he hoped, be so met in a large number of schools throughout the country before long. The governors of King Edward VI.'s schools in Birmingham, which comprise about 2,200 boys and girls aged from 8 to 19, had established, three years ago, a periodical physical examination of the scholars in regard to height, weight, chest measurement, eyesight and hearing. The eyesight test was carried out by certain teachers appointed for the purpose. It made no pretence of being a scientific proceeding; there was no attempt to estimate refraction or diagnose disease. Any such attempt was worse than useless unless the examiner were an ophthalmic expert. In every case in which the vision in either eye was less than $^6/_{18}$, an intimation of the fact was sent to the parent, and with him rested the responsibility of obtaining the necessary advice and choosing the adviser. The Anthropometric Committee, appointed at the last meeting of the British Association for the Advancement of Science, having Professor Cleland and Professor Windle for its chairman and secretary, had lately issued an enquiry to a large number of schools as to whether, and to what extent, periodic physical examination of the scholars was in force. From the replies received, it appeared that the eysight was tested in eight out of 483 boys' schools in England, Scotland and Ireland (Whitaker's list); and in six of 129 girls' schools in England; while color vision was tested in three only of the whole number. Many of the principals, however, expressed the willingness to take up anthropometric work on receiving directions for carrying it out. The speaker laid before the meeting the printed directions which had been drawn up, and which were to be sent, in the first instance, to about 200 schools. The eyesight test included in this scheme was practically the same as already in operation in the King Edward's schools in Birmingham. It involves practically no expense, and very little trouble to the school authorities, and it interested at least one teacher in every school in the eyesight of the scholars. In advocating this system, the speaker did not in the least undervalue the importance of a thorough medical examination of schools, and he knew that many schools already had duly appointed medical officers competent to deal with errors of refraction, but these were exceptions. By making this simple eyesight test a part of the anthropometric scheme, now being so energetically pushed by the Committee of the British Association, they would, he was confident, attain the desired end in a large number of schools, where it could hardly be attained in any other way.

TEST OF VISION.—These tests will serve to detect the presence of certain common defects of vision. Such defects are often overlooked or disregarded, to the permanent detriment of the pupil. The tests will not reveal the nature or cause of a defect. This can only be determined by an expert.

(*a*) Acuteness of Vision.—(1) Hang on the wall, in a good light, a set of Snellen's test letters; these are in general use, and afford records which can be universally compared. *No others should be substituted for them.* (2) Draw a line on the floor at a distance of exactly six meters from the letters, and let each pupil in turn toe this line and try to read the letters, line after line, beginning at the top; in all cases without spectacles or eye-glasses. Each eye is to be tested separately, the other eye being covered, but not pressed upon, by a large card held in the pupil's hand. (3) Record the vision of each eye separately in the form of a fraction, for instance, thus:—

$$\text{R. V.} = {}^{6}/_{\text{VI}}.$$
$$\text{R. V.} = {}^{6}/_{\text{XVIII}}.$$

The numerator is in all cases 6, *i. e.*, the distance of the letters in metres; the denominator is the number which stands over the lower line of letters which can be read. When the vision is less than ${}^{6}/_{\text{LX}}$ it should be recorded by the appropriate sign, viz.: $\text{V.} < {}^{6}/_{\text{LX}}$. (4) Take care that the pupils have no opportunity of learning the letters by rote.

Note.—When the vision of either eye is found to be represented by a fraction having a denominator of more than XVIII, it will generally be desirable to report the fact to the parent or guardian, in order that proper advice may be obtained, such report being omitted if this has already been done.

(*b*) Color Vision.—(1) Use Holmgren's series of colored wools. (2) Place them in a heap on a white cloth, in a good light. (3) Lay, apart from the heap, the test skein—a pale, pure green. (4) Explain to the pupil that he is to select from the heap and place beside the test skein, all those which appear to him to be of the same kind of color. Do not require him to name them or match them exactly, but to select those which are most nearly like the test skein in color. (5) Mix the wools again for each pupil, but always use the pale pure green as the test.

A certain number of the pupils—boys, very rarely girls—will match the test-skein falsely with buffs, pinks, and other colors which have no green tint, or will hesitate much before rejecting such. These pupils are more or less color blind, and are thereby permanently unfitted for vocations on land or sea which requite good color vision. Record the defect.

NOTE.—Ascertain by this same test that the person who conducts the color-testing is not himself color-blind. Such cases have been known.

The *Acuteness of Vision* of each pupil should be tested once a year, since certain defects of eye-sight commonly begin during school life.

The test for *Color Vision* need not be repeated, since color-blindness, except that which occurs with disease of the eye, is congenital, not acquired.

The President thought that the proposed scheme might be of great value in throwing light upon the refractive changes going on in the eye in school life. In addition to the proposed examination, he thought it necessary to test the near point of vision for the detection of hypermetropia and defective convergence.

MR. HOLMES SPICER did not understand whether Mr. Priestley Smith's paper applied to elementary schools or not; in the case of the elementary schools, he thought that leaving the duty of remedying the defects of vision in the hands of the parents would end in many cases in their not being remedied at all. It was in the lower grade schools that the examination was most necessary; in one school of 500 pupils that he had examined lately in the East End of London, he had found 40 per cent. of the children, whose acuteness of vision was less than one-half of the normal; the defects were now being treated, but such systematic examination and treatment took a considerable amount of time.

MR. DOYNE dwelt upon the difficulty of obtaining the near point of distinct vision in children.

Mr. Simeon Snell spoke of the difficutly of obtaining a systematic examination of the eyesight in schools owing to the want of appreciation of the teachers; he thought this was greater in the middle class than in the elementary schools.

Mr. Priestley Smith, in reply, said it was the higher schools which were likely in the first instance to adopt these tests. He was conscious that the matter was beset with difficulties, as had been pointed out; were it otherwise it would long since have been satisfactorily settled. Referring to the demand which had been made more than once that every school doctor should either periodically examine the children's eyes himself, or call in a specialist for the purpose—that would be very difficult to realise. It was important not to aim too high. An examiner, whether lay or medical, who should attempt to use test glasses without a thorough knowledge of refraction, would do harm rather than good by giving to parents a false feeling of security that their children's eyes had been examined with the necessary skill. He had sought to avoid every unnecessary technicality in the test, and to make it clear that it was not a medical examination. He thought that placing the limit below which defects of vision should be reported at $^{6}/_{\text{XVIII}}$ would meet the case fairly well. It would catch quite low degrees of myopia, and though it would not catch all the hypermetropes these would, as a rule, take care of themselves by complaining when any real difficulty existed. It was the progressive myopia which was so commonly neglected that they practicularly wanted to catch.

On Three Cases of Tubercle of the Iris.

Dr. Arthur Sandford read notes on three cases. The first two were examples of iritic tuberculous deposits coincident with fresh lung trouble of a similar nature. In one case the latter was a first attack, and in the second was a renewal of tuberculous activity in an old dried-up cavity. The third case was one of primary iritic tuberculosis, the ciliary region, suspensory ligament, and apparently the lens itself being infiltrated by the tuberculous elements. The case occurred in a child aged 5 years, with tuberculous meningitis. There was no evidence of tuberculous mischief in any other organ. The globe was therefore excised and sections made. The tuberculous mass half filled the anterior chamber. The patient improved greatly in health, and had been under observation ever since (eight years). At present she was a fragile, delicate-looking girl, but free from any special ailment.

MR. JOHNSON TAYLOR was of opinion that in all cases of primary tubercle of the iris the eye should be excised; in secondary tubercle—that is, where other organs were involved—nothing should be done.

DR. HILL GRIFFITH said it had been shown that practically all cases of intraocular tubercle were secondary. It was not possible in any given case to say whether the affection in the eye was primary or not; he did not think such eyes should be excised always, as in many instances slowly-growing tuberculous formations in the iris yielded to treatment, and left an eye with useful vision.

INTRA-CRANIAL ABSCESS ARISING FROM CARIES OF THE SPHENOIDAL CELLS.

Notes of this case were read Dr. A. Sandford. The abscess caused double optic neuritis and subsequent post-neuritic atrophy, with complete blindness, about twenty-seven years before the patient's death, which took place in the Cork District Lunatic Asylum at the age of 78 years. The left half of the skull was exhibited, showing situation of the abscess, which had penetrated the left orbit, causing proptosis and also the outer wall of the skull by erosion of the bone, Internally the tumor had raised up and stretched the optic nerves and commissure.

A RARE FORM OF INTRAOCULAR MELANOMA.

This paper was read by Mr. John Griffith. After giving a brief account of the clinical history of the case, he described in detail its microscopic appearance. He considered the tumor to be epithelial, starting in the tapetum nigrum of the retina, for there could be no doubt that the cells were not sarcomatous, their size, shape and arrangement having nothing in common with those of sarcoma. The ciliary body was not invaded, but merely displaced inwards by the tumor pushing its way into the lymph space to the outer side of the ciliary muscle. He referred to the works of Mr. Treacher Collins, who had shown that primary epithelial melanomata may take their origin in the ciliary glands. Mr. Griffith, however, did not believe that in his case the growth had originated in this way; he thought it was an instance of a melanoma springing from the retina, and, as it was malignant in nature and epithelial in structure, it conformed rather to the type of carcinoma, although it possessed many features unlike that class of new growth. He saw no reason why epithelial melanomata should not originate in either the retina, the ciliary body, or the iris.

CARD SPECIMENS.

The following were the card specimens:
Mr. Hartridge—"A Case of Strumous Keratitis."
Mr. J. A. Warner—"Two Cases of Ectopia Pupillæ."
Dr. Argyll Robertson—"A Case of Trichosis Bulbi."
Mr. Rockliffe—"A Case of Diabetic Retinitis."
Mr. Simeon Snell—"Spectacles for Entropion."
Mr. Mackinlay—"Cyst of Iris."
Mr. Donald Gunn—"Growth at Yellow Spot."

FRIDAY, JULY 6, 1894.

A NEW OPERATION FOR TRICHIASIS AND DISTICHIASIS.

MR. W. SPENCER WATSON read this paper. A bridge was formed by incisions parallel to one another and to the margin of the lid, including in its substance the whole of the faulty eyelashes; a "button-hole" lying horizontally above the margin of the lid was thus formed. Into this "button-hole" a "button" marked out in the skin immediately above it by a semilunar incision was turned, and fixed *in situ* by sutures. The result was to place a band of skin, which soon became partly mucoid in character, at the margin of the eyelid; by this means the transplanted eyelashes were quite removed from the cornea and assumed in their growth a normal horizontal direction. A case exhibited showed the advantages of this method of operating.

Dr. Brailey believed that the operation did not remedy the faculty curve of the upper lid, whereby the cornea was unduly pressed on.

Mr. Benson thought Mr. Spencer Watson was entitled to great credit for introducing the whole series of transposition operations for the relief of deformities of the lids. He thought that this operation was inferior to Van Millingen's operation and its various modifications now in use. The disadvantage of Spencer Watson's operation was that the skin did not turn into satisfactory mucous membrane, small hairs still remained in the skin, and the epithelium was different from that of the cornea, and was always harmful to it.

Mr. Spencer Watson, in reply, described his first operation and the difference between it and the present method. In his experience, although the skin did not become a true mucous membrane, it did assume a mucoid character, and was not harmful to the cornea.

Monocular Asteroid Hyalitis.

This paper was read by Mr. Arthur Benson (Dublin). Captain ——, aged 62, was in good health, but was suffering from asthenopia and muscæ in the right eye ($V.={}^{6}/_{\text{IX}}$. J. 1, and $H+0.75$ D,). This he attributed to overstrain, caused by excessive and prolonged use of the eyes some thirty years before. He had syphilis as a young man, but there had been no manifestation since. The right vitreous was found to be thickly studded through and through with hundreds of small, stationary, cream-colored spheres, arranged apparently without system, and varying in size from extreme minuteness to about a quarter of a millimeter or so in diameter. They suggested the appearance of stars on a clear night so strongly that the name "asteroid hyalitis" seemed suitable, their pathology being unknown. As the eye was otherwise quite normal, and as the vision in it was practically equal to that of its fellow, Mr. Benson thought that the condition was probably congenital. It was not caused by cholesterin crystals, nor did it at all resemble the hyalitis punctata seen in syphilis or in serous cyclitis. It had remained quite unchanged during nine months while under Mr. Benson's observation. In his experience the case was unique.

The President had seen a similar case, except that the spheres floated about instead of being stationary; in his case there was also incipient cataract.

Mr. Lang had also seen a case of spheroidal bodies in the vitreous, but they were movable. The vision was unaffected.

Mr. Jessop suggested that, as these bodies were fixed and were seen with ÷ 32 D., they might be in the lens; he thought that no body in the vitreous could be quite fixed.

Dr. Battan referred to a case of spheroidal bodies in the front part of the vitreous in a myopic patient of advanced age.

Mr. Benson, in reply, said that the bodies were not confined to the front part of the vitreous, but were closely distributed through the whole vitreous from the back to the front.

NOTES OF A CASE OF SYMPATHETIC OPHTHALMIA OF THE RIGHT EYE WHICH SHOWED ITSELF EIGHTEEN DAYS AFTER A KICK IN THE LEFT EYE.

This paper was read by Dr. Adolph Bronner (Bradford). There were no signs of external wound nor of rupture of the left eye. The eye was enucleated, but there had been several recurrent attacks of typical sympathetic ophthalmia of the right eye during the last two years, serous iritis with opacities of the aqueous and vitreous and slight inflammation of the optic nerve. Twenty similar cases had been recorded, of which, however, only five were genuine. In four of these five the uveal tract of the injured eye was diseased, These cases seemed to speak strongly against the microbic origin of sympathetic ophthalmia.

THE USE OF CHLORINE WATER IN CERTAIN DISEASES OF THE EYE.

This paper was read by Mr. Lawford. He gave notes of cases in which it had proved of real service. His experience of it as an intraocular application was limited to two cases; in both instances suppuration in the anterior chamber was arrested after the use of liquor chlori. The other cases in which the solution had been used included purulent conjunctivitis, membranous conjunctivitis, suppurating ulcers of cornea, and purulent dacryocystitis.

MR. POWER had used aqua chlori not infrequently, but almost entirely in diphtheritic cases.

MR. LANG employed chlorine water at times. He had used it once as an intraocular injection in suppuration of the globe; the suppuration was arrested, but though the eye was retained, it subsequently shrank. He had also used it in hypopyon and and corneal suppuration, but without uniformly satisfactory results.

MR. LAWFORD, in reply, said that Dr. Berry had found suppuration in the vitreous arrested after the use aqua chlori; he had found it very satisfactory in one case of diphtheria. Von Graefe had recommended it in granular lids, but he had had no experience in this affection.

CARD SPECIMENS.

Mr. Griffith—"Case of Filamentary Keratitis."

Mr. Power—"Section of the Orbit in a Case of Congenital Exophthalmos in an Infant."

Mr. Jessop—"Case of Sloughing of Both Eyelids and Eyeball in an Infant with Subsequent Complete Cicatrization."

EIGHTH INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

Edinburgh, August 7–10, 1894.

Mr. Geo. A. Berry opened the Congress by nominating, on behalf of the Provisional Committee appointed by the last Congress at Heidelberg, Dr. Argyll Robertson for President.

President's Address.

The President, Dr. Robertson, upon taking the chair, expressed his thanks for the honor; he stated that if a great interest in the advancement of ophthalmology was a qualification for the office, he possessed that, at least. Edinboro', he observed, was the eye of Scotland, as Athens had been of Greece, and could boast of a distinguished university and eminent teachers, among whom he mentioned Syme, Simpson, Bennett and Goodsir.

The Congress about to begin was the eighth, the first having been held in Brussels in 1857. These international meetings fulfilled an important purpose, not only by reason of the valuable papers, but by furthering international courtesy and good will. International distrust is usually the result of ignorance.

Of those present at the first Congress, there was, perhaps, but a single one in attendance to-day—Prof. Zehender.

Since the last meeting at Heidelberg, 1888, our science has had to deplore the death of two eminent members, Donders and Becker.

Donders was one of the greatest ornaments to science, and especially appreciated by those who knew him personally. He was preeminently a leader of men; stately of presence, wise, firm and able. His works are known to all and need no mention; his master-mind pointed out the solution of many obscure problems in physiology; in ophthalmology he was supreme, and, with Helmholtz and Von Graefe, he was the creator of modern ophthalmology.

Becker's genial and kindly manner, as well as his great ability, made for him an important place at these meetings. His able investigation of the pathology of the lens had added much to our knowledge of the diseases of that organ.

We have to-day to deplore the recent affliction of the great master, Helmholtz, who has been stricken with paralysis. He has the sincere wishes of every member of this Congress for his speedy recovery.

The President congratulated the members upon the prospects of the present Congress. At the last meeting the propriety of continuing these congresses was gravely discussed. The present one justifies the determination that they should be continued, and that, too, in spite of the Congress at Rome, which also had an ophthalmological section. He anticipated that many more will be held; it would be deplorable to discontinue these meetings.

He concluded his address with the hope that the International Congress may ever flourish, and may each successive meeting be more prosperous than the preceding.

The President read the list of officers as follows: Vice-Presidents, Mr. Powers, of London, and Mr. Swanzy, of Dublin; General Secretary, Mr. Berry; Assistant Secretary, Parent for the French, Hess for the Germans, and Fergus for the English; Honorary Presidents, Panas, Meyer, Landolt, Zehender, Leber, Hansen Grut, Reymond, Snellen, Roosa, Knapp, Critchett, Priestly Smith, Teale and Reid.

The address of welcome was delivered by the Lord Provost on behalf of the city.

At the conclusion of the address the President remarked that it was a unique event in the history of Edinboro' that the chief magistrate should be a member of the medical profession (as the present Lord Provost was), he, therefore, moved that the Lord Provost be made an honorary member of the Congress. Carried unanimously.

The scientific business was begun by a paper by Dr. Snellen (Utrecht), on the

SUBCONJUNCTIVAL TREATMENT OF OPERATIVE AND TRAUMATIC WOUNDS OF THE CORNEA AND SCLEROTIC.

Such wounds are prone to infection and to be followed by sympathetic inflammation, so that enucleation in the case of every wound involving the ciliary region has been proposed. The old operation for cataract was similarly liable to be followed by sympathetic inflammation. Hence the great interest excited by Graefe's propositions; but it was neither the linear section nor the iridectomy which was the important matter—only the narrow knife remains, and even this is being modified. Thanks to the light which emanated from Edinboro', infection can now be largely avoided. Our first concern is to secure complete closure of the wound. In cataract we must prevent prolapse of the iris. Secondary prolapse is more liable if the iris has been outside the eye during the operation.

Turning the knife forward enables the operator to make a suitable conjunctival flap. The rapid union of this flap removes all danger of external infection, and healing is subconjunctival.

The English operation for squint allows of subconjunctival healing by suturing the conjunctiva, and so by suture of conjunctiva after enucleation.

Glaucoma may also be treated by the subconjunctival method (by sclerotomy and suture of conjunctiva). Javal's ophthalmometer shows that those operations for glaucoma give the best results which show the greatest amount of post-operative astigmatism, and to secure this the incision should be in the sclera, which permits the greatest ectasia.

The good results of subconjunctival treatment of operative wounds has suggested similar procedure for traumatism. After thorough cleansing, Snellen sutures the divided conjunctiva over the wound. He has seen many an eye saved by this means which would have been lost without it.

CATARACT EXTRACTION.

DR. KNAPP, of New York, read a paper entitled, "Remarks on Cataract Extration, Based on a Recent Series of Six Hundred Successive Cases." He would refer to three points in the operation of cataract:

1. Indications for iridectomy.
2. Prolapse of the iris.
3. Operations for secondary cataract.

He had done 630 extractions during the last four years; 30 were excluded from the series here reported on account of the almost hopeless conditions therein present, such as glaucoma, etc., not, however, that all of the 600 reported were uncomplicated. He has done iridectomy in 52 of the 600 extractions, the chief reason being a great tendency to prolapse. He did the iridectomy were the pupil would not be circular after the patient had been placed in bed, fifteen to thirty minutes after the operation. Of the cases of simple extraction, prolapse occurred in 55=10.2 per cent.

Conclusions: Prolapse of the iris is inherent in the method, and will occur in a certain proportion of cases.

Knapp has been unable to avoid this. What harm does it do? Of the 55 cases in which it occurred, 14 required subsequent operations.

Results—V. in 49 good, in 7=$^{20}/_{\text{xx}}$.

Two moderately good.

Two lost sight of operated eye.

Two lost sight of both eyes (sympathy).

Secondary operation on the capsule was done in 403 of the 600 cases =66% for the purpose of giving every patient the best possible results. He never operates for this until all irritation has subsided; he prefers the second or third month; the capsule is not yet thickened and cuts like butter.

He opens the capsule for extraction by a linear section under the upper part of the iris.

Before discission, every eye is carefully examined under atropine, to determine to what extent the deficient vision depends upon the opacity of the capsule. The incision should not extend deeply into the vitreous and no aqueous should escape during operation. It should be done under good artificial illumination. If the capsule is too dense, a double needle operation should be practiced or iridectomy.

The reaction is almost *nil*.

In 12 cases the capsulotomy was followed by acute glaucoma; 4 of these were cured by eserine, 7 by iridectomy—one only was lost.

DISCUSSION ON BOTH PAPERS.

DR. LITTLE, of Manchester, Eng., began to practice simple extraction five years ago. Since then he has done 106 simple extractions and 322 combined extractions. The simple extractions were all uncomplicated and carefully selected. They were mature, no thickening of capsule, patients steady and reliable, no undue action of the recti muscles. There were four failures—nearly 4%. In two the iris prolapsed on second and third day, both followed by suppuration.

The third case was lost from glaucoma.

The fourth case, pupil closed from acute iritis.

He had found that prolapse depends largely on the situation of the corneal section, if this be midway between the periphery and center of the cornea, the danger of prolapse is great; the more peripheral the section the less danger of prolapse (!). He had ten cases of prolapse, and excised the prolapsed portion in every case but one.

Among 322 cases with iridectomy, there were but six failures =2%—three from iritis with closure of pupil, one from intra-ocular hemorrhage, one from corneal suppuration, only one case of prolapse of the iris, but a number of slight hernias which had no significance. Vision was nearly equal in both series, as was also the frequency of iritis. He pronounces in favor of iridectomy.

MR. SWANZY, of Dublin, is an advocate of combined extraction, because he is not prepared to face 10% of prolapse of the iris, and Dr. Knapp says one must be prepared to face this.

He has had only 1% of prolapse in last 200 cases of combined extraction. As soon as Dr. Knapp reduces the percentage to 1% in simple extraction, he shall take up that operation.

The dangers of prolapse are not to be overlooked—beginning with sympathetic ophthalmia all the way down to increased post-operative astigmatism. The coloboma is almost no disfigurement, patients do not complain of it, nor do their friends. To avoid prolapse, the iridectomy must be of a certain kind, the less you excise, the greater the protection against prolapse. The small iridectomy allows the aqueous behind the iris to have an exit, and the smallness of the coloboma permits the sphincter of the iris to act with greater power. The iris should always be properly reposited by a spatula, we should not trust to appearances alone.

The opening of the capsule as done by Dr. Knapp involves the disadvantage of a secondary cataract.

DR. NOYES, of New York, believes iridectomy to be a mutilation, but simple extraction is unsuited in certain cases as where the pupil will not dilate, where there is considerable soft cortex, and in cases with plus tension *i. e.*, something approaching glaucoma.

In the great majority of his operations he does simple extraction; the corneal wound should be large, only 1 mm. above the horizontel diameter at points of puncture and counterpuncture. Iridectomy is painful unless you cocainize to excess, drying the cornea and making the globe soft. He uses atropia before and after operation; has abandoned eserine.

DR. HANSEN GRUT, of Copenhagen.—In regard to Dr. Snellen's claims for the conjunctival flap, this was necessarily made in Graefe's operation. There is one serious event connected with it of which Snellen has not spoken, and that is hemorrhage making the operation more difficult with greater danger of infection. He would like to second Mr. Swanzy in what he says as to simple and combined extraction; of course, simple extraction is the ideal operation.

He can not keep his patients five or six weeks for the secondary operation, and envies Knapp's ability to do so with all his heart. Has heard nothing in these papers which he did not know before. (Great laughter).

MR. CRITCHETT, of London, sides with iridectomy; agrees with all, Swanzy has said. The iris may be anesthetized without excessive cocainization by dropping a few drops of the solution into the anterior chamber.

He formerly opened the capsule by a vertical incision, now he does so by a horizontal one. The lips of the vertical incision overlap, while the lower lip of the horizontal cut falls down.

TEALE, of Leeds, one of the earliest to advocate abandonment of iridectomy, has himself gone through the various phases of the operation.

It is possible to get as good results in every respect without as with iridectomy, If this proposition can be proved, the simple operation gains the day. The older men will not give up their pet operation, but advance in this particular is for the younger men.

SNELLEN, of Utrecht, thought the great cause of prolapse of the iris is to be found in prolapse of this structure during the operation. He teaches his students to cut off the iris if it has prolapsed at the time of operation.

To avoid prolapse:

1. The corneal section must be large.
2. There should be no pressure on the globe, hence he does not use a speculum. He thinks that those who get prolapse often have to thank the speculum for this accident.
3. Anæsthesia, not the amount of cocaine, but the time it is instilled is important, even one-half hour before operation. After operation employs pilocarpine.

He almost always punctures the capsule fourteen days after operation. He tells his patients so in advance. In six weeks, the capsule will be too tough.

KNAPP—Swanzy almost does simple extraction. The simple operation is safer; when healing is once complete, the eye is less disposed to after-diseases than with iridectomy. Microscopic examination of such eyes show shreds of capsule and iris in the wound.

For capsulotomy, he does not use a stop-needle; this does not cut, but tears. Grut says nothing new has been advanced. For himself, he did not come here with the intention of making a revelation. His glaucoma cases had not been attended by adhesions. Capsulotomy gives a permanently clear pupil, which is not the case where this is not done.

SCLERAL PUNCTURE AS AN ADJUNCT TO IRIDECTOMY IN THE TREATMENT OF GLAUCOMA,

was the subject of a paper read by Mr. Priestly Smith. The reason for some other procedure than iridectomy in glaucoma is: Iridectomy sometimes fails, even in acute glaucoma, while it is quite uncertain in chronic glaucoma.

The causes of failure of iridectomy are various. The nearness of the lens to the cornea renders a scleral section difficult and corneal section is not of much use. The latter gives no ectasia nor drainage. Moreover, there is danger of wounding the lens.

It is easy to lower the tension by scleral puncture, making the subsequent iridectomy easier. The sclera is punctured at least 5 mm. back of the cornea with a Graefe knife. The knife should be slightly rotated so as to give a gaping wound, and not completely withdrawn until a bead of fluid escapes.

The character and quantity of the fluid varies, depending upon the state of the vitreous. A perfect knife and absolute asepsis are essential.

The immediate effect is considerable reduction of the tension; when, in a few days, higher tension returns, this may be reduced by pressure upon the globe through the upper lid. The tension finally returns.

Scleral puncture alone is inadequate, and is only recommended as preliminary to iridectomy.

Smith now punctures the sclera in every case prior to iridectomy; has already performed 41 such operations: iridectomy follows usually at once, but, in a few instances, he has delayed the operation several days.

He now advises the operation (scleral puncture followed by iridectomy) where, a few years ago, he would have despaired of any good result.

DISCUSSION.

ABADIE, of Paris, thought sclerotomy had yet to make its way. It is established iridectomy will cure. Where iridectomy fails, sclerotomy will assuredly be of no service.

PFLUEGER, of Berne, had done an iridectomy which was followed by increased tension. Sclerotomy gave time and the opportunity for a subsequent iridectomy, so that this patient owes his sight to sclerotomy.

HARTLEY, of Leeds, in one case found the difficulties of iridectomy increased after scleral puncture, perhaps because of the too great softness of the globe.

POWERS, of London, had some experience with sclerotomy thirty years ago, when it was done to a considerable extent in London. The results were sometimes very satisfactory, as any method would be which reduces tension. If he had glaucoma and could get no skilled oculist, he would prefer sclerotomy. As for chronic glaucoma, there was not much to be done for it.

DR. SMITH advocates the scleral puncture as an adjunct to iridectomy and *never* as an independent method. Would recommend this operation in every case where there is any sight left to save.

INJURIES OF THE EYE THROUGH FOREIGN BODIES CONSISTING OF COPPER.

DR. LEBER, of Heidelberg, read a paper on this subject. The highly poisonous nature of this chemical substance is very injurious. Extraction of the body is difficult in most cases. When it is removed, the irritation soon subsides. These inuries are mostly due to percussion caps. The explosion and flame destroy any germs which may be adherent. Hence it is proper to attempt to save eyes so injured, even if there be pus in the vitreous, provided this can be attributed to the chemical action and not to infection. There is, moreover, in such cases (of copper poisoning) no danger of sympathetic inflammation.

The essential question is: Is the pus due to microbes? There is a high degree of probability that this is not the case, and that the inflammation is aseptic. This may be determined positively by the microscope and by cultures.

Extraction of the foreigh body should be tried whenever any vision is left, and will succeed in about one-half the cases. He would term it conservative treatment of penetrating wounds of the eye due to foreign bodies consisting of copper.

He narrated several clinical histories.

DISCUSSION.

DR. KNAPP related his experience in the removal of such a foreign body, with good results preserved 22 years later.

DR. ROOSA has seen gun-caps remain in the eye for years—in one case, for 20 years. Would ask of Professor Leber if the situation of the injury has not something to do with sympathetic inflammation, as well as microbes.

DR. NOYES reported similar cases.

DR. LEBER had not observed sympathetic inflammation in any case. In two cases he enucleated, but subsequent anatomical examination showed that this had been unnesessary.

DR. PANAS, of Paris, read a paper on

TRAUMATIC PARALYSES OF THE MOTOR NERVES OF THE EYE.

The anatomy explains the symptoms after fracture of the skull.

DR. PANAS made some experiments by subjecting skulls to pressure, and the resulting fracture was the key to the clinical symptoms.

DR. CHIBRET, of Clermont-Ferrand, reported a case of the kind.

A NEW OPERATION FOR PTOSIS.

DR. MULES, of London, designed to substitute the lifting action of the occipito-frontalis for that of the levator, not by scar tissue, which connot be regulated, but by a permanent wire that is adjustable.

DISCUSSION.

DR. LITTLE had seen one case operated on by Mr. Mules, and was much pleased with the operation.

TREATMENT FOR THE IMMEDIATE CURE OF CORNEAL ULCERS.

DR. MULES divides these into those of nervous and non-nervous origin. Nerve cases are not included. He cures these (non-nervous cases) in a few days, without scraping, cautery or section. Histories of twelve cases were given of infiltrated corneal ulcers with hypopyon in some of the cases, iritis in one. The cure was usually complete in three days, with a small nebula remaining.

The treatment consisted of—1. Anæsthesia by an 8% solution of cocain. Then he applies a thin wafer of iodoform over the cornea and gently closes the lids; these are covered with a pad of iodoform, the whole secured by a flannel roller to secure rest and prevent reinfection. After three days no further protection is necessary.

He has employed the same treatment as a prevention to infection after operations with uniformly good results.

DISCUSSION.

DR. NOYES said, in 1876, at the Congress in New York, Dr. Williams, of Cincinnati, had recommended the application of carbolic acid, and he, Dr. Noyes has proved its value.

DRAINAGE OF THE EYE.

DR. PFLUEGER read a paper on this subject. Drainage has not been practiced in the eye except in detached retina. Other indications for it exist if we had a good method. For example, infection of the anterior chamber. This might be met by puncture and injection. In recent cases of detached retina, such drainage of the anterior chamber might be of service in facilitating the circulation of lymph. Might also be of use in kerato-conus and glaucoma. He has devised a soft rubber drainage apparatus for this purpose.

DISCUSSION.

DR. WALKER, of Liverpool, makes a permanent fistula by inserting a flap of conjunctiva into the corneal wound and the external muscles (recti) and orbicularis prevent closure.

End of first day's proceedure.

SECOND DAY, AUGUST 8.

DEMONSTRATIONS.

Specimens, microscopic slides, etc., were shown by Dr. Dimmer, of Vienna, of Albuminuric Retinitis; by Dr. Borthen, of Drontheim, of Leprous Diseases of the Eye; by Dr. Juler, of London, The Anatomy and Physiology of the Iris; by Dr. Franks, of Hamburg, of the Histological Changes in the Healing of Perforating Wounds of the Sclera.

DR. MANN, of Edinburgh, gave a lantern demonstration of the alterations in cells of visual centres produced by exposures of the eyes to light. He arrived at the following conclusions:

1. Nerve cells at rest store up chromatic material which is used up during the functional activity of the cell.
2. While this chemical change is going on, the nucleus enlarges, unless the action proceeds to over fatigue when it collapses.

CHORIO-RETINITIS AND RETINAL CHANGES.

DR. ABADIE, of Paris, read a paper on choroido-retinits, its clinical varieties, etiology and treatment. He said: The ophthalmoscopic picture does not correspond to the disturbance of function, because the choroidal changes which are most marked ophthalmoscopically are not necessarily accompanied by corresponding retinal changes and *vice versa.*

This disease is apt to be accompanied by a peculiar form of optic atrophy, which is quite unlike the ordinary atrophy. It is of intra-ocular origin, and the color sense is not affected. Dr. Abadie would emphasize this point, and, finally, it is amenable to treatment.

The treatment consists in the administration of mercury, preferably subcutaneously. Potassium iodide is most harmful. Cases so treated do not yield good results. If treated subsequently with mercury, recovery is the rule.

Dr. Gunn, of London, read a paper on the changes in the macula associated with retinal inflammation and edema, which he illustrated by a lantern demonstration. He had produced similar appearances in dead eyes by prolonged soaking in fluid.

Dr. Benson, of Dublin, reported observations on recurrent temporary visual obscurations, with the ophthalmoscopic appearances observed during the obscurations. The patient, an adult male, experienced sudden complete obscuration of the sight of the left eye four years ago, for the first time. Since then has had numerous recurrences, and, for the last five months, in the right eye also.

At first, the attacks came on at intervals of one month; later, as often as twice daily. For two years there was no failure of sight in the intervals between the attacks. It then began to decline, until now V.=R. $^{6}/_{LX}$, L. $^{1}/_{LX}$, with color scotoma. He does not use tobacco to excess, and is otherwise in perfect health.

Eyes normal externally. Ophthalmoscope ordinarily shows little. The disc is rather hazy, some white lines along the smaller vessels, and a few bright spots in the fundus of the left eye.

Examination immediately after an attack of obscuration showed complete obliteration of the lower temporal artery, which lasted a few minutes and the blood column slowly returned. There were three such examinations during or immediately after an attack, and the appearance was each time as noted. An obscuration lasts from 2 to 5 minutes. Sometimes only a portion of the field is affected. There are no other subjective symptoms, no vertigo, no headache, no vomiting.

The attacks seem to be on the increase; the vision continues to get worse in the intervals.

Venous pulsation was present in both eyes; an arterial pulse could be produced by slight pressure.

DR. NETTLESHIP has published two cases with somewhat similar symptoms; but heart-disease is not present in this as in Nettleship's cases, and the obscuration is sometimes partial.

What is the explanation? Thrombosis or spasm? The extremely temporary character points to spasm, though local vascular disease may also be present.

DISCUSSION.

DR. NIEDEN, of Bochun, would ask whether sphygmographic tracings had been taken in Dr. Benson's case.

DR. DEUTSCHMANN, of Hamburg, would put a few questions to Dr. Abadie. Does he wish to erect a new form of choroidal disease? What are his reasons for considering the atrophy of the nerve as intra-ocular in origin? May it not be a forerunner of tabes.

He did not agree with Dr. Abadie's condemnation of potassium iodide. He himself gets better results from this than from mercury, though he approves the subcutaneous administration of the latter.

DR. THOMPSON, of Indianapolis, had frequently seen changes in the macula in young women during menstruation, after violent exercise, but very rarely in men.

DR. NOYES has seen fundi like those shown by Dr. Gunn, and has had two cases of temporary obscurations.

Dr. Abadie replied: The optic atrophy is not caused by the choroiditis, but is a part of the process. Cases of atrophy should be carefully examined. A small patch of choroiditis may be found, and this will clear up the diagnosis. He repeated his objections to potassium iodide.

Retro-Choroidal Hæmorrhage.

Dr. Dufour read a paper on retro-choroidal hæmorrhage after operations on the eye. He congratulated any operator who has never had a case of this kind. He who has met with it after a well-executed operation will never forget it. In the first five he did nothing but use hemostatic measures with total loss of the eyes. The last three were more happy.

There is nothing to suggest that such an accident is to be expected, neither in the eye nor elsewhere, as in the heart, blood-vessels, etc. In his third last case, as soon as he observed the patient began to groan, he gave a large injection of morphine. The patient got pale, nauseated, and the hæmorrhage, or rather exit of the contents of the globe, was at once arrested. A fortnight later the ophthalmoscope showed a detachment of the retina at the source of the hæmorrhage. The retina became reattached. V. finally $={}^{1}/_{x}$. In two subsequent cases he injected 1 centigram of morphia with arrest of the bleeding.

Discussion.

Dr. Powers, of London, thought careful examination might differentiate these cases. Such eyes are not healthy.

Dr. Gruening, of New York, wished to know the ages of these patients. He had such a case early in his practice in a man aged 90. Recently he saw a case in a patient aged 84. Does it occur only in the very aged? Recorded observations are rare.

Dr. Darier, of Paris, thought apomorphia should be combined with morphia.

DR. AYRES, of Cincinnati, had a similar case in which he was compelled to enucleate.

DR. DUFOUR.—The ages of the patients were 50 to 80; the accident was not peculiar to the very old age. Apomorphia would have been indicated, but he did not have it, as we do not expect such on accident.

DR. TSCHERNING, of Paris, read a paper on the "Mechanism of Accommodation."

DR. CHIBRET had seen the margin of the lens emmetropic, and the center myopic during accomodation in a case of aniridia, by the shadow test.—*Philadelphia Polyclinic.*

[TO BE CONCLUDED.]

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

Vol. XI. OCTOBER, 1894. No. 10.

ORIGINAL ARTICLES.

A CASE OF QUADRISECTORAL HOMONYMOUS HEMIANOPSIA.

BY M. P. WEYMANN, M.D., ST. JOSEPH, MO.

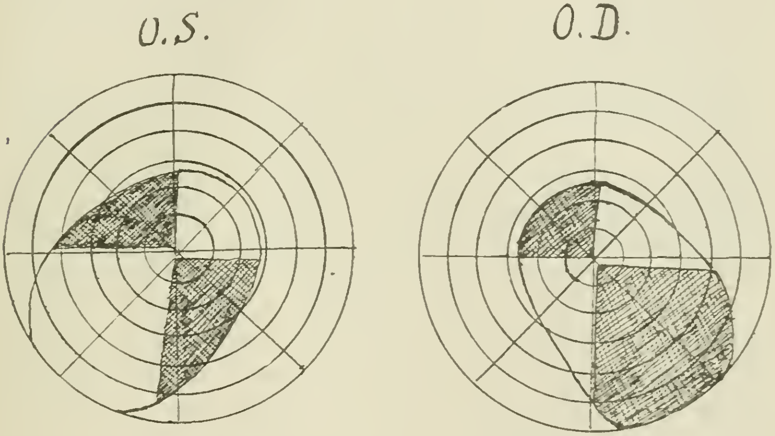
Professor Northwestern Medical College.

"Professor" B., a well-known dancing master of this city, consulted me for some eye trouble about a year ago. He was at that time suffering from paralytic symptoms due to a long period of sickness from which he had not yet recovered. Though his eyes had bothered him before, they were not nearly as bad as at the time of consultation. In July, 1893, he began to suffer from very severe and continual headaches, and one day, while standing in a drugstore, he suddenly lost consciousness and fell to the floor. He was carried to his home, and continued to be unconscious for nearly twelve hours, but on recovering found himself paralyzed on the right side, the upper extremity being affected the most severely. The case was then considered, and treated, as an attack of apoplexy. The measures employed seemed successful for the patient was able to resume the instruction of dancing classes in September. He noticed, however, that his eyes were worse and that his cephalalgia continued unabated. About November his health began to fail again. Vomiting would often accompany his headaches and his memory began to show signs of unreliability, while his temper became exceedingly irritable. He had to take to bed, for his mental action seemed at times entirely suspended, while sometimes he would become so violent that he had to be restrained by force. Several physicians were at the time in attendance, but their measures seemed without effect, for the patient became worse continually. Even his reflex system began to suffer, as fæces and urine were passed involuntarily and unconsciously. His speech, too, became thick and unintelligible, as articulation seemed almost impossible. The impression and appearance of idiocy were still further increased by a paralysis of the oculo-motors on both sides, which, however, disappeared a few days later.

Although the patient's history was well known to the attending physicians, several adhered to the theory of apoplexy. Others suspected cerebral syphilis and treated it as such, while several more held different opinions. The disagreeing diagnoses together with the uniform lack of improvement caused many changes in the employment of medical attendants. Besides, the patient was such a well-known character about town that his disease became a frequent subject of discussion, even among the laity.

Dr. Riley, of this city, was the first to bring about an improvement and it was he who first urged an examination of the eyes. The patient told me at once of his syphilitic infection and his former dissipation, as a result of which there could be seen a Hunterian scar on the dorsum of the tongue, which showed especially plainly on rubefaction. Ophthalmoscopic examination revealed a normal fundus with perfect transparency of the media. At the papilla considerable blanching could be seen, still it was not the appearance of plain and unmistakable atrophy. His muscles balanced well, but his acuity of vision had suffered some (O. S. V.$=^{20}/_{\text{XL}}$; O. D. V.$=^{20}/_{\text{XL}}$). The testing was accompanied by continual turning of the patient's head, a fact explained by his records of vision.

The fields given below show very little *general* contraction, but two large scotomata in both eyes. All of these defects were absolute. Owing to their homonymous disposition, objects under fixation would lack two corresponding quarters, a fact which did not allow reading without continual turning of the head and eyes.



FIELDS OF VISION.

WHITE=Area of Sight. BLACK=Sectors Blotted Out.

The hemianopsia coming as a result of an apoplectoid seizure, the violent headache, the occurrence of paralytic symptoms, both of the skeletal muscles and those of the eyeball together with the blanching (atrophy ?) of the papilla caused me to make the diagnosis of tumor cerebri, while the patient's history caused me to assume a syphilitic pathogenesis.

Dr. Riley's treatment had already greatly improved his condition, but he was a little afraid to still further increase the dosage on account of the fault-finding talk of some officious druggist; even a meddling physician hand ventured the prediction that such medication would corrode the patient's stomach.

It was for that reason that Dr. Riley feared trouble in case of some accidental complication. The patient had, up to that time, gone a little over two drachms for a single dose, administered three to four times a day. I urged an increase, however, recommending to raise the daily quantity to two ounces (℥ij) and to divide said amount into five or six doses, thoroughly diluted in water. In case of trouble I promised my full support and sanction of the treatment in question. These heroic quantities brought on rapid improvement, enabling the patient to resume his business some four months later. His eye sight, however, is still incomplete, the scotoma remaining unchanged, although he thinks his vision is clearer

With references to "massive" medication I would say that I first saw it carried out by the well-known neurologist, Prof. Walker, of Indianapolis, and I must confess that I have seen some wonderful results from it. Whenever ordinary specific measures refuse to cure a case of syphilis in spite of all the care and attention given to the system in the way of building it up and avoiding hurtful influences, massive medication should be given a trial, but *only after the ordinary methods have proved unsuccessful.* So far as the tolerance of the system for iodides is concerned, it is wonderful how much of it can be given without complaints on the part of the patient.

Owing to the history of our case most of the attending physicians had ordered specific medication, but without avail. Dr. Riley first began with high doses with the results described.

ANALYSIS OF LOCALIZATION.

Injury to one of the optic nerves anterior to the chiasm would cause monocular blindness. Trouble in the chiasm may cause hemianopsia, but not the homonymous variety.

(We must consider our case as an instance of incomplete homonymous hemianopsia, both right and left.

Homonymous hemianopsia may have its origin in:

1. Optic bands.
2. Optic thalamus (incl. ant. corp. quardrig.)
3. Occipital lobe. *a.* Gray matter. *b.* White matter.

The first two possibilities are here excluded. The sectoral nature of the defects would require compression of a well-defined, sharp-cut quarter of a band, a thing hardly possible with a large diffuse infiltration; besides, this same identical nicety would have to occur on the other side With reference to the optic thalamus we would quote Nothnagel's statement that trouble in the latter location is not accompanied by paralytic symptoms. DeWecker's statement leaves the occipital lobes as the place of morbid action; he says:

"L'existence de scotomes symétriques parle en faveur d' un processus pathologique siègeant (dans) les hemisphères. * * * L'hemianopie peut etre complète, et le scotome absolu. Dans ce cas il s'agira de destruction plus large comprenant les éléments *optiques* d' un hemisphère."

The co-existence of motor and sensory disturbances shows that also the back part of the internal capsule was implicated. The double homonymous scotomata (incomplete hemianopsia) imply damage to both occipital lobes.

REPORT OF A CASE OF NEURO-PARALYTIC KERATITIS FROM INJURY TO THE TEMPORAL BONE.

BY L. R. CULBERTSON, M.D., ZANESVILLE, OHIO.

Miss E. O. C., six years ago was run over by a farm wagon one wheel of which passed over the mastoid portion of the left temporal bone crushing the mastoid completely and injuring facial nerve in the Aquæductus Fallopii at the point where it gives off the chorda tympani nerve, causing paralysis of left side of the face and constant dryness of the left half of the tongue (she is constantly trying to moisten this half of tongue). She protrudes the tongue to the right. Says her left eye is numb. Hearing normal. No difficulty in deglutition.

Ophthalmoscopic examination: R. E. media normal; disc shows slight atrophic cupping; arteries too fine, veins enlarged, capillaries wanting on disc. Disc pale (grey atrophy). Iris normal as well as choroid. L. E. dense opacity (leucoma) of entire cornea result of neuro-paralytic keratitis. No evidence of corneal ulcer visible now. She says "that when she was run over the entire left side of face became black and blue; that eye became inflamed and swollen; that she was deaf in left ear for some time." Her reason is somewhat impaired. No history or evidences of syphilis. Knee-jerks normal. No anæesthesia or hyperæsthesia other than mentioned. V. R. E. Rem. with $+$ 1 s. $\bigcirc$ $-$ 1.5 c. at $180 = {}^{4}/_{\text{IV}}$.

REMARKS.

As deglutition and hearing are normal I conclude that the injury to the facial nerve was at a point below where it gives off the motor fibres to supply the otic and Meckel's and the spheno-palatine ganglia. The neuro-paralytic keratitis could be accounted for in several ways:

First, If the branches of the great sympathetic were inpaired as it passed through the petrous portion of the temporal bone to supply the ophthalmic ganglion, it would by causing dilatation of vessels of the cornea, iris, choroid, etc., cause inflammation of cornea and perhaps destruction of entire globe.[1]

Second, The nasal branch of the fifth nerve before entering the orbit, gives off a long filament to the opthalmic ganglion, and then the long ciliary nerves supplying the ciliary muscle, iris and cornea.[2] The filament of the nasal going to the ophthalmic may have been injured; or the nasal branch itself may have been injured.

Third, The sympathetic branch supplying the ophthalmic ganglion; or the branch of the fifth may have been affected by the meningeal inflammation. W. E. Kant[3] reported a case of a boy who received a wound of the squamous portion of the left temporal bone an inch above the insertion of the auricle. Probe passed to depth of an inch. Left cornea opaque and of a milky white color; there was much general congestion of the eye. Cornea remained hazy. Four months later the function of both the muscular and sensory nerves had been regained, but to only a limited degree. Mr. Cant thought the injury had been one of direct injury to the whole fifth nerve within the skull, between the brain and the Gasserian ganglion. or at the latter.

In my case the great weight which crushed the mastoid portion was sufficient to have split the petrous portion at its apex. Or could the wedge—the petrous portion—so beautifully formed by Nature to resist shock aud injury to the base of the brain, have been loosed and forced slightly inward? It does not seem possible.

The surgeon who attended her at the time is dead and I regret that I cannot get his record of her case.

---

[1] Chapman's Physiology.

[2] Chapman's Physiology.

[3] Proceedings of the Ophthalmological Society of the United Kingdom, 1889, in British Medical Journal.

SOCIETY PROCEEDINGS.

EIGHTH INTERNATIONAL OPHTHALMOLOGICAL CONGRESS.

EDINBURGH, AUGUST 7–10, 1894.

[CONCLUDED.]

THIRD DAY.

DEMONSTRATIONS.

DR. LEBER, of Heidelberg, demonstrated the value of a new method of hardening eye preparations in formol. Formol hardens by coagulation and has no attraction for water. Eyes may be examined twenty-four hours after immersion. No washing out of fluid is necessary, and the color of the tissues and transparency of the media are preserved.

DR. BACH, Würzburg, demonstrated the more minute structure of the ciliary ganglion.

DR. OSTWALT, of Paris, gave a demonstration of ophthalmotonometry.

DR. GUTMANN, of Berlin.—The Nature of Schlemm's Canal.

DR. CLARK, of Columbus, Ohio.—A Serous Cyst of the Iris.

STRABOTOMY.

DR. LANDOLT, of Paris, read a paper on this subject. His experience in the surgical treatment of squint may be summed up thus: The superiority of advancement over setting back of the muscle. There is more than one good method; the essential point consists in bringing the muscle and surrounding structures as near to the cornea as possible and fixing them there. The result to be attained is not simply apparent parallelism in the primary position, but both eyes should be fixed on the same point throughout the entire field of movement; this is not shown by a photograph.

Tenotomy always produces limitation of movement; advancement does not. Advancement causes no disfigurement. It is precisely in insufficiencies and feeble degrees of squint that advancement is most indicated, unlike the general opinion which regards advancement only as an adjuvant to tenotomy in very high degrees.

The operation should only be performed after all other means have failed; if the squint persists, there is always time for tenotomy.

Discussion.

Dr. Swanzy, said: Squint operations are like the question of cataract operations—one operator prefers one method, another, a different one. Dr. Graefe's rules in the matter still hold good. He has never done advancement alone, but only in combination with tenotomy. He does not believe that tenotomy should be rejected to the extent Dr. Landolt advocates. Advancement sometimes causes disfigurement in a small lump near the cornea, due to buckling of the tendon. It is good practice to combine resection of the tendon with advancement, but it is difficult to determine how much, and if you overdo, there is no help.

Dr. Panas agreed fully with Dr. Landolt.

Dr. Roosa had practiced advancement in extreme cases, but would not substitute it for tenotomy, as a rule. Advancement is a more serious operation. Does not think diplopia will result from tenotomy, if the refraction has been carefully attended to, especially, if the astigmatism is corrected. Advancement is an adjuvant to tenotomy, but cannot replace it.

Dr. Noyes.—There is more in this matter than the operation; cerebral and amblyopic conditions have a place, and these modify the method to be employed. Stevens' instruments permit of a small wound and thus the sinking of the caruncle may be avoided. Advancement is an adjuvant, but not the prime method. We always should endeavor to restore binocular vision. To succeed in this, the patient must be intelligent, and therefore the operation should not be done in children.

DR. GRUENING said his work had been in a direction opposed to that of Dr. Landolt. He has tried to substitute tenotomy where advancement is recommended.

DR. STEVENS, of New York, said, as Dr. Landolt has insisted, the object to be attained is the production of binocular vision throughout the entire field. This demands a study of all the tensions which bring this about, hence Dr. Landolt is inconsistant in advancing the muscle of one eye and leaving the corresponding muscle of the other eye untouched. Dr. Stevens has, for many years, insisted on this point. He has not been as successful as Dr. Landolt in his advancements. He believes that advancemont restricts rotation more than does tenotomy.

DR. LANDOLT, in reply, said: If it is a question of operation, we must operate upon the muscles and not upon the motor centres. Operation is not the cure—only one step in a long course of treatment. Refraction is to be attended to, with orthoptic treatment, etc. With all his admiration for Dr. Graefe, he believes that Dr. Graefe's views on strabismus were erroneous. He hoped that at the next meeting, more of the colleagues will agree, not so much with what he has said, but with what he has implied.

BEST WAY OF USING MERCURY IN OCULAR THERAPEUTICS.

DR. DARIER, of Paris, thought inunction the most certain and rapid method. Alimentary administration has many disadvantages, as interference with digestion. The amount which can traverse the liver depends upon the condition of the passages, and varies greatly. The hypodermic method is the most exact. He has employed for this purpose chiefly the peptonate and bichloride and the cyanide, to which he gives the preference. Injections may be given daily or less often; he injects 5 milligrams largely diluted, and obtains as powerful effects as by inunction.

Many affections can be treated locally by subconjunctival and even intra-ocular injection, without producing systemic effects. Such treatment is not empirical but philosophic. The eye is well adapted for such local treatment. Local therapeutics are indicated where rapid action is necessary, as in sympathetic ophthalmia, where intra-ocular injection offers the best chance; so, too, in secondary septic infection, after operation. Septic corneal ulcers are best treated by subconjunctival injection.

In some diseases of the deep seated structures, as choroiditis and retinitis, subconjunctival injections have given astonishing results.

So, too, in infection of the iris after traumatism. But he cannot say the same of endogenic infection. The method is very useful in hypopyon keratitis, interstitial keratitis, plastic iritis, in combination with general hypodermic injection.

Discussion.

Dr. Deutschmann, speaking of subconjunctival injection, said: Long observation is necessary to arrive at correct conclusions as to the value of this method. He is well satisfied of its usefulness in certain cases. It is necessary to distinguish between syphilitic and non-syphilitic disease. It is most valuable in specific forms. In infective keratitis, the cautery is superior; in interstitial keratitis a cure may be obtained in six to eight weeks, which would otherwise require four to six months. It is especially valuable in iritis, particularly specific iritis. He has treated very severe cases of this disease with numerous posterior synechiæ, and found that the eye has become free from all irritation in eight days; and that without the use of atropine, the iris had become free from adhesion to the capsule. Choroiditis, retinitis and affections of the optic nerve, have yielded less satisfactory results; in specific choroiditis, the results have been better.

In sepsis, after operation, subconjunctival injection is the very best treatment. He should not be deterred by the occurrence of the great chemosis which follows. Experiments on animals by injection of large quantities of germs are not parallel with the process in man where the germs are few in the beginning of the morbid process.

DR. HESS, of Leipzig, made experiments in animals and found the injections absolutely useless, even if these were begun before the eye had been infected.

DR. DUFOUR, of Lausaune, reported a case of infection for a foreign body in which the focus could be seen to diminish daily under the injections. It makes no difference whether the chemist can find mercury in the eye or not. In atypical interstitial keratitis he had obtained excellent results.

DR. GUTMANN has tried injection in fifty cases, and did not have a single favorable result; in one case of iridio-choroditis the conditions were much aggravated.

DR. BACH has had no favorable results. In eighty rabbit eyes in which he practiced subconjunctival injection, the chemical examination failed to find a trace of mercury.

DR. CHIBRET sometimes gets good effects, and sometimes none.

DR. DARIER.—If Bach has failed to find mercury in the eye, it has been found by other chemists. He himself has no rabbit patients (!) and it seems strange that the drug should be useful in man and not in rabbits. In interstitial keratitis the best results are obtained in the torpid cases and not in those with great congestion.

REMARKS ON THE OPERATIVE CORRECTION OF MYOPIA.

DR. THIER, of Aix-la-Chapelle.—Mooren, as early as 1855, advocated this treatment. Donders opposed it on account of the loss of accommodation. Mauthner would have been an advocate of it, he stated, if an operation could be devised as free from danger as is iridectomy.

It is still too early to say what the effect will be on the accompanying choroiditis posterior.

Dr. Fukala, of Pilsen, reintroduced it. He has operated 38 times—11 times on both eyes.

There was improvement in all but three cases in the acuteness of vision. Experience shows that even near work is better performed by an aphakic eye than by a highly myopic one. Cases of 13 D. and over are suitable. If one eye only be operated, with the idea that the patient will use the unoperated eye for near work, this will be found not to be the case. He prefers the work with the aphakic eye at all distances.

Dr. Fukala would exclude high degrees of choroiditis. There is some danger of detachment of the retina, but this accident occurs in high degrees of myopia without operation.

Dr. Meighan, of Glasgow, has operated three times. Two were satisfactory, one was followed by detachment of the retina three months after operation. The operation involves considerable risk, as do all operations in high myopia. More extended experience is necessary before definite conclusions can be formulated.

Dr. Schmidt-Rimpler, of Göttingen, had the opportunity of examining an eye in which discission had been done forty years before for congenital cataract in one eye. Both eyes were myopic, so that the operation had not arrested the development of the myopia, perhaps because one eye having not been operated upon, the evil effects of convergence persisted.

Dr. Pflueger had operared in 40 or 50 cases. He agrees with Dr. Fukala; all his results were good. Choroiditis is not a contra-indication in myopia of 15 D. and upward. Choroiditis is almost always present, and he has found no inconvenience from this. He has not yet observed a case of detachment of the retina. This is, of course, possible in high myopia, even where no operation is done. He has operated up to the age of 48.

Dr. Fergus, of Glasgow, has operated on nine eyes. Does not operate for less then—18. D. He once operated on a myopia of—15, leaving the patient hyperopic and not emmetropic. He would rather not operate in patients over 24 years of age. He usually draws off the macerated lens.

A person with M.=15. D. has no use for his accommodation. He would not operate when the myopia is progressive, but wait until it became stationary.

EXCISION OF IRIS AND INFILTRATED TISSUE.

DR NOYES, of New York.—Iridotomy is useless in these cases; so is iridectomy even by Wecker's scissors. What remains? He makes a double incision with a Graefe knife. As the knife is withdrawn it is at once plunged through the tissue. A weak solution of common salt is injected through one opening which is forced out through the other. Then he introduces de Wecker's scissors and makes two incisions meeting at an angle, and again injects the solution to clear the eye of blood and restore its tone. Finally he introduces a hook to withdraw the flap formed by these incisions out of the eye; this is then cut off. He again irrigates and bandages.

DR. DARIER said that Abadie had described a very similar operation four years ago.

NEW SYSTEM OF DESIGNATING PRISMS.

DR. BURNETT, of Washington, read a paper on the "Nwe Metric or Dioptral System of Measuring and Designating Prisms." Instead of numbering by the angle of the prism, it is proposed to measure the actual deviation on a plane at a meter's distance. A prism which causes a deflection of 1 cm. at that distance is No. 1, and its refractive power is called a prism-dioptre. A deflection of 2 cm.=2 P. D., etc.; the sign △ is used instead of °.

FOURTH DAY. DEMONSTRATIONS.

DR. BORTHEN, of Drontheim, demonstrated drawings of leprous diseases of the eye with remarks.

DR. Bronner, of Bradford.—"Specimens and Photographs of Lymphoma Cured by Arsenic."

DR. RISLEY, of Philadelphia.—"Apparatus for the Support of Trial Glasses and a Variable Prism."

DR. AYRES, of Cincinnati.—"Granulation and Chalazion Forceps."

ARTIFICIAL RIPENING OF CATARACT.

DR. MCHARDY, of London, read a paper on the artificial ripening of immature cataract by preliminary iridectomy, with trituration through the cornea. This subject has occupied his attention for nine years. Complete ripening of immature senile cataracts may be safely attained in from eight days to eight weeks.

Subsequent extraction is as safe as when maturation is left to nature and free from the evil results of removal of immature cataracts. He prefers to wait six or eight weeks after trituration before extracting. The eye should be well under atropine at the time of trituration.

DISCUSSION.

DR. NOYES believes there is a field for trituration; iridectomy is not necessary. Young subjects with no sclerosis of the nucleus are the most suitable. Cataracts with sclerosed nuclei can be readily extracted, without maturation. He has operated in cases where patients were still able to go about, but not to read, and where the disc and vessels could be seen.

DR. GRIFFITHS, of Manchester, only adopts the procedure in cases where a distinct object is to be gained. He prefers to have the cataract mature naturally, and only triturates where this process is extremely slow, as in a case in which he employed it five years ago with success in one eye, and the other is still in the same condition as five years ago.

Extraction is the same as when the lens matures of itself. He believes operations on immature cataracts to be dangerous.

SYMPATHETIC OPHTHALMIA AFTER SARCOMA OF THE CHOROID.

DR. NIEDEN, of Bochum, found but three cases of this kind in literature (where no perforation took place). His case was that of a young lady aged 21 When first seen, there was a detachment of the retina in the right eye. This had existed for months. The left eye was healthy. Diagnosis: Detachment of retina, only slight suspicion of a tumor. Some months later, the patient returned with severe plastis iritis of O.D.V. $={}^{2}/_{LX}$; O.S. healthy. The iritis was rapidly cured by the usual treatment. Tension normal. A few months later the patient again returned with deep inflammation of both eyes. Iridocyclitis, descemetitis, opacities of vitreous. O.D. worse than O.S.—V.O.D. fingers at a meter. O.S.V$={}^{6}/_{L}$. O.D. tension +1. Diagnosis of tumor of O. D. and sympathetic ophthalmia of O. S.—O. D. enucleated and O.S. treated in the usual way; final result, V almost normal. Microscopic examination by Deutschmann showed the growth to be a spindle celled sarcoma of the choroid of the right eye.

Deutschmann found micro-organism in O. D , to which the inflammation of the other eye is to be ascribed by endogenous infection.

LARGE LACHRYMAL PROBES.

DR. THEOBALD, of Baltimore, read a paper on the "Radical Cure of Stricture of the Lachrymal Duct." He has advocated larger probes for seventeen years. His treatment is based on a study of the anatomy of the parts. It is useless to expect to cure with a probe of $1^{1}/_{2}$ mm. in diameter, in a canal the diameter of which equals 4.25 mm. There is less risk of a false passage with large than with small probes. His experience of seventeen years show that the cure is permanent.

DISCUSSION.

DR. GRUENING has had experience with Theobald probes, corroborates all he has said. He observed a smile of incredulity in some when No. 16 was mentioned, but that number can be passed without injury. He has seen the lachrymal gland extirpated—a proceedure entirely unnecessary if the case is treated by large probes.

DR ROOSA does not admit that his results, without large probes, are bad. Bowman's probes, slightly enlarged for special cases, answer every requirement. Many cases are simply catarrhal without stricture.

DR. SWANZY would ask about the curvature Theobald gives to the probes; those shown are hardly suited to the direction of the duct.

DR. THOMPSON thinks many cases are not cureable by any method. Solon's advise to Crœsus to count no one happy until he is dead, applies to this affection, *i. e.*, till patient or surgeon is dead.

DR. RISLEY objects to the statement that conservative treatment yields no results. Large probes destroy the physiological function of the duct, which is that of a capillary tube and not a drain pipe.

DR. PRIESTLY SMITH treats these cases by inserting a style after probing. Patients wear the style for three months with no inconvenience. Some treatment is given the the lower end of the duct in the nose.

DR. LEE, of Liverpool, uses hollow probes with several apertures at the side and injects some antiseptic solution.

The President stated that Cooper, of London, had introduced large probes eighteen years ago; to him belongs the credit, whatever it may be.

DR. STOLTING, of Hanover, read a paper on the cure of hydrophthalmus.

It was decided to hold the next Congress in Utrecht, Holland.—*Philadelphia Polyclinic.*

SELECTIONS.

THE PREVENTION OF BLINDNESS—OF OPHTHALMIA NEONATORUM AND OF DEFECTIVE EYESIGT, BY SANITARY LEGISLATION.[1]

BY BENJAMIN LEE, A.M., M.D., PH.D., PHILADELPHIA, PA.

Secretary of the State Board of Health of Pennsylvania.

In considering the individual with reference to his value to his community and to the State, it will readily be admitted that there are many kinds and degrees of imperfect or perverted vision, which, while they do not make the victim an actual burden upon the State or upon his kinsfolk, do seriously impair his usefulness, and make him a less productive member of the social hive than he would be with perfect lenses, normal accommodation, and humors of unimpaired translucency. Not simply the fact that he will perform with greater difficulty all operations requiring keen sightedness, but the additional fact of the long train of nervous disorders which are induced by the exhausting efforts of the imperfect eye to meet the requirements of even the every-day duties of life—to say nothing of those of skilled workmanship—must be taken into account in measuring the disability thus caused. The day has gone by when the myope could boast of the strength of his eyes. The dictum is now well established that the near-sighted eye is an imperfect eye, and almost invariably, often at some critical period, when its owner can least afford to dispense with its services, it sooner or later develops its unreliability.

---

[1] Read before the American Academy of Medicine at its Nineteenth Annual Meeting, at Jefferson, N. H., August 28, 1894.

I do not forget the wonderful advances made in ophthalmology in the discovery of errors of refraction and accommodation and of the mechanical means for their correction. In fact, as I look back to the condition of that science when I began my medical studies, and its then helplessness in view of such disorders, and reflect how many sufferers are now restored to comfort and usefulness who would at that time have been stranded on the shores of a useless and often agonizing invalidism, I am filled at once with regret and with gratitude—with regret that such an incalculable amount of relievable suffering went so long unrelieved; with gratitude that such amazing relief can now be afforded and by means so apparently simple. This seems to me indeed one of the most brilliant achievements of modern medical science. But, even in this work of relief, energies are expended and inventive genius exhausted in fields which are simply reparative and not productive. So that, even from this optimistic standpoint, there is still a loss to the State.

It would be ludicrous, were it not mournful, to note how ready we are, in our organized capacity, to provide relief for "defectives," and yet how slow to adopt measures to prevent their existence. Our law-givers disclose a mental myopia of a high grade in their observation of social conditions. The State will not do its full duty until the health officers and the sanitary authorities take an active supervision of the individual from the first moment of his existence to the time when—having lived out his hundred years in the full possession of all his faculties, the use of which he has enjoyed to the full, while at the same time he has added to the wealth of the country and the happiness of his fellows—his body, simply yielding to the inexorable touch of time, shall relinquish its relaxing grasp upon this happy spirit and set it free for higher flights.

Beginning, then, with the new-born child, is there any *cause of blindness which could be removed by the interposition of the law?*

In the State of Pennsylvania, we are confronted by the startling fact that, while the increase of population during the decade ending with the year 1880 was 21.6%, the apparent increasese in blindness was 119.18%, showing that this disability had increased more than five times more rapidly than the population. Allowing its full value to the probable greater fullness and accuracy of reporting during the later decade, there is still in this result food for the most serious reflection. The inquiry naturally suggests itself whether a possible cause can be assigned for this lamentable disproportion.

One factor is certainly deserving of consideration, and that is the fact that a large proportion of the increase of population was due to immigration. Owing to the extensive mining, iron working and railroading interests of the State, the great mass of these immigrants were either Slavs or Italians. Now, as is well known, among these peoples a physician is rarely called upon to preside over the act of parturition. The entire care of the new-born child is left to the midwife, nurse or neighbor. Couple this with the now well recognized fact that the most important factor in the production of blindness is *ophthalmia neonatorum;* and here may we have a partial clue to the distressingly rapid increase of this class of defectives? With reference to this last statement, the evidence is overwhelming. Fuchs found that among 3,204 cases of blindness collected from asylums in different parts of Europe, 23.5% were due to ophthalmia neonatorum. In the New York Instition for the Blind at Batavia, 23.4% of the inmates are there as the result of the same disease.

Horner has shown that, among 100 blind asylums in different countries, the variation was from 20 to 79%—average, 33%.

Hausmann gives the number in the asylum at Copenhagen, made blind by this disease, 8%; in Berlin, 20%; in Vienna, 30%; in Paris, 45%.

According to the report of the Royal Commission on the Blind of the English Government, published in 1889, 30% of the inmates of the institutions and 7,000 persons in the United

Kingdom have lost their sight from this cause. Professor Magnus, of Breslau, finds that no less than 72% of all who become blind during the first year of life are rendered so by purulent ophthalmia; and even of those who become blind before the twentieth year of life, it constitutes as much as 23.-50%. Looking at the subject in another way, he shows that, of 10,000 children under 5 years of age, 4.28% are blind by purulent ophthalmia. In the blind asylums of Switzerland, the proportion who have lost sight from this disease is 26%; in the asylums of Austria, Hungary and Italy, about 20%; while in Spain and Belgium it falls to about 11 or 12%. An investigation into the causes of the blindness of 167 inmates of the Pennsylvania Institute for the Blind, made by Dr. George C. Harlan, of Philadelphia, developed the fact that fifty-five owed their affliction to purulent ophthalmia, and that more than half of these cases occurred in infancy. But nothing is better established than that ophthalmia of the new-born is an infectious and therefore a preventable disease. Whenever it is demonstrated that a disease is infectious, contagious, communicable from person to person, either by direct contact or through the medium of infected articles, it becomes the duty of the physician and the sanitarian to discover, if possible, the source and character of this infectious matter, and to devise means for preventing its transmission.

Ophthalmia of the new-born is an infectious disease, and can only occur after the infectious matter has come into active and somewhat prolonged contact with the conjunctiva. The noxious matter is in every instance derived from an inflamed vagina (or urethra) or from another eye. In the great majority of cases, infection takes place from the vagina; and it is to be remembered that the disease is not caused by the secretion of a specific (gonorrhœal) catarrh only, but that it may be produced by the secretion of simple leucorrhœa, or at least by what is recognized as such clinically.

Formerly this disease was attributed to a variety of causes, such as injuries received by the eyes during birth, icterus, chilling of the body, too intense light, and so on, but these views are, of course, no longer entertained.

It is hardly too much to say that no one should become blind from this disease; not only because it is quite amenable to treatment, if this be instituted from the beginning, but because the disease itself can be prevented in most instances if those who have the care of mother and child understand the nature of the infection.

From the facts and figures above given, it will be seen that this is simply another way of saying that one-third of those who are now blind might have been saved from this calamity.

Other Fellows who are to address the Academy on closely allied subjects to my own, will be more capable than I to speak at length on the diagnosis and history of this disease, and the means to be adopted for its prevention and speedy cure before vision has suffered permanent impairment. Suffice it to say, that the latter should include attention to the nature of vaginal discharges during the later months of pregnancy; the employment of disinfectant vaginal injections during labor, *if necessary;* careful watching of the eyes of the infant for the first few days of life; and prompt abortive treatment of the first stage of the infection, should it unfortunately occur.

The Crédé method, which consists in carefully washing out the eyes with pure warm water, and then instilling two or three drops of a 2% solution of nitrate of silver, is usually sufficient to entirely abort the attack. Perfect recovery with an unimpaired cornea should reward the careful use of this treatment.

Dr. Lucien Howe, of Buffalo, has collected two lists of cases, the first showing the results obtained and published by different obstetricians who used no treatment for the eyes of 8,798 children born under their care. Among these 8.66% had ophthalmia in a greater or less degree.

The second list of 8,574 shows the result of the Crédé treatment. In these cases, there were only 0.65%. In the lying-in hospital of Leipzig, where Crédé instituted his method, the percentage fell from 7.5 to 0.5%. The advantages of Crédé's method have been recognized by its official recommendation in Austria, Germany, Switzerland and France.

All this presupposes the attendance of a physician. While the State cannot compel every pregnant and parturient woman to have a medical attendant, it can insist that whenever the acting accoucheuse shall notice the slightest indication of inflammation of the eye or the lids, she shall at once notify a legally-qualified practitioner. The sanitary authorities should appoint physicians qualified to treat such cases, and should furnish such attendance free of expense in case of evident poverty. This is certainly as legitimate an expense on the public purse as free vaccination.

In European countries this is made obligatory. The State of New York has had a law in operation for more than three years requiring midwives and nurses to report every case of inflamed or reddened eyes, occurring within two weeks after birth, to some legally-qualified practioner within six hours after discovery, under penalty of a fine or imprisonment, or both.

Deeply impressed with the importance of this subject, and feeling the responsibility which rests upon it to use the authority conferred upon it for the diminution of this serious disability, the State Board of Health of Pennsylvania has formally adopted the following regulation:

REGULATION V.—FOR THE PREVENTION OF BLINDNESS.

Whenever, in any city, borough, village or place in this State having no health authority of its own, any nurse, midwife or other person, not a legally-qualified practitioner of medicine, shall notice inflammation of the eyes or redness of the lids in a new-born child under his or her care, it shall be the duty of such persons to report the same to some legally-qualified practitioner of medicine within twelve hours of the time the disease is first noticed.

And furthermore, that Board urgently recommends the passage of a similar ordinance by the councils of all cities and boroughs, having health authorities of their own, and the adoption of a similar regulation by such health authorities.

Further, the utmost care should be insisted on in all public educational, correctional and charitable institutions, particularly those occupied by children, to prevent the spread of contagious ophthalmia among the inmates. The common use of wash-basins and towels should be absolutely done away with, and any individuals so affected should occupy a separate dormitory, and not be allowed to mingle with the other children.

The State, however, has only done half its duty when it has relieved society of its burden of one-third of the cases of actual blindness heretofore existent. As already said, perversions and defects of vision as certainly, though not to as great a degree, interfere with the complete efficiency of the individual as absolute destruction of sight. Hence, the sanitary authorities should follow up the growing child from the cradle through adolescence to maturity. Although the eye of the child who has escaped ophthalmia in infancy is almost always good before attendance on school is begun, we find that a larger and larger per cent of pupils have imperfect eyes (as we advance from the kindergarten to the high school) until, it is said, that among educated Germans no less 67% have imperfect or defective eyesight. It is certain that these imperfections in great measure, develop during the years of school life. If this is so, how are these imperfections caused?

1. By using the eyes too constantly at a short distance, as in reading and writing. Indian boys in the woods never become near-sighted, but thousands of our school children do every year. At birth the eyes are adapted to be used at all distances, but by using them exclusively at short distances they soon become of value only for seeing objects close at hand.

2. By using the eyes too constantly and too long at a time. The eye is a very delicate organ; its parts become weary like the rest of the body. If overworked, serious results follow.

The eyes should never be used when they ache, pain or smart, or when vision is weak or blurred.

3. By using them when weak from sickness. After the diseases of childhood, as measles, scarlet fever, whooping-cough, etc., the eyes are often left weak, and may be many months in recovering their full strength. If at such times they are much used in reading or studying, they are very liable to receive permanent injury. To this cause may be laid a large proportion of the defective eyes in our schools.

4. By using the eyes in insufficient light. Very many of our school-rooms are poorly lighted. Children cannot see in them on dark days. Rooms are made still darker by the use of curtains and blinds, which are often partly closed or drawn, and are placed at the top instead of at the bottom of windows. Windows are very often too small. They are often filled with flowers. If children study in the evening, it is too often with a poor light.

5. The print of school-books is too often fine and indistinct.

6. Especially is this the case with regard to maps, which are in the highest degree confusing and distressing to the vision.

7. Polished black-boards are both distressing and trying to the eyes, the writing on them not being visible except from certain points of view.

8. The chalk-dust caused by the use of the black-board and of a dry cloth or eraser is very irritating to the eye.

In what way can the State prevent these deplorable results and preserve the normal vision of its people?

First, by taking pains that school directors shall be persons of intelligence and education, and that positions on school boards shall not be the rewards of political tricksters and ward workers.

Secondly, by issuing instructions to school directors, as to the construction and maintenance of school edifices, especially with regard to the proper introduction of light.

Thirdly, by making positions on school boards open to women, who, as a rule, are more keenly alive than men to the necessity for guarding the health of children in every respect.

Fourthly, by compelling all applicants for positions as teachers to pass an examination on the hygiene of the school-room, and especially on the hygiene of the eye.

Fifthly, by printing and distributing, not only among these functionaries, but also among parents and the public generally, brief circulars of information and instruction on these subjects.

Sixthly, by obtaining the introduction into public prints and the daily press of articles of the same nature.

Seventhly, by diminishing the hours of study, especially in the primary grades, and diminishing the amount of reading and writing now required during study hours, by encouraging the use of object teaching and illustrated lectures.

Eighthly, by stamping out all eruptive contagious diseases, which are known to have inflammation and ulceration of the eyes, or asthenopia as their sequels.

Enough has, I trust, been said to demonstrate that the State has very definite and positive duties, not only for the prevention of the increase of this large class of defectives, but for the absolute abolition of one of its divisions, and the notable diminution of all.—*Virginia Medical Monthly.*

INTERDEPENDENCE OF OCULAR AFFECTIONS.

BY JAMES A. LYDSTON, M D., PH.G.

Lecturer on Diseases of the Eye and the Ear, Chicago College of Physicians and Surgeons.

The tendency of ophthalmological literature to individualize eye diseases is so great that an attempt to trace a closer relationship subsisting between the various ocular affections seems highly justifiable, and may prove interesting to both the oculist and general practioner. Glancing at any ophthalmological text-book, we find that each disease discussed therein is treated as a separate and distinct affection, possessing such characteristic manifestations that the student in disposed to believe that a diagnosis is so simple that it can be obtained at a glance; and it is only after a succession of failures that he is led to appreciate the folly of such belief. Were we to consider the intimate association of the several ocular tunics from an anatomical stand-point, we would see at once the fallacy of an attempt to separate distinctly and clearly any type of inflammation implicating these structures. It is only in the types of superficial inflammation of the sclera, cornea, and conjunctiva that we can with any reasonable degree of certainty announce to a patient that no other structures are implicated, and even here we might err, were we to aver positively and unequivocally that the conjunctiva, sclera, or cornea were alone involved, basing our conclusions upon the character of the injection pr-es ent. And yet we find that the nature of an inflammatory process affecting external structures is very frequently founded upon the forms of injection present,—*e.g.*, we find ciliary injection distinguished from conjunctival injection by certain distinctive phenomena, such as color, depth, displacement of blood-vessels, etc., but these are by no means reliable as a means of differential diagnosis in all cases. In order to emphasize more clearly the intimate association of the types of ocular inflammation, we will direct our attention to the more frequent diseases attacking the extra-ocular tunics, the conjunctiva, cornea and sclera. The varied forms of conjunctivitis are in many instances complicated with irritation of the deeper structures, and to a still greater extent is this true with respect to the cornea, as we often meet with an inflammation of this structure which at first glance appears to be essentially simple, and yet upon more careful investigation of the deeper structures we detect iritic and ciliary complications.

This obtains particularly with respect to keratitis parenchymatosa, in which we often see a deeper anterior chamber, iritic irritation, choroiditis anterior and posterior, increased or diminished intraocular tension, so that we are not in a position in any given case of keratitis parenchymatosa to isolate the phenomena of this affection and ignore other concomitant manifestations, which necessitate a guarded prognosis as to the ultimate outcome of the affection. Again, in case of scleritis, inflammation of the sclera, which is one of the rarest of ocular affections, we are led to conclude finally, if indeed we are not forced to observe at the outset, that the contiguous structures are involved, and the remnants of the disease are always corroborative of such conclusion. Again, one of the most frequent accompaniments of inflammatory changes about the ocular structures is the so-called inflammatory œdema occurring in almost multitudinous affections, such as lid inflammations, erysipelas, hordeola, periostitis, inflammation of the lachrymal sac (dacrocystitis), acute blennorrhœa, purulent keratitis, iridocyclitis, purulent choroiditis, panophthalmitis, etc., and yet we would be far from justified in concluding from its mere presence that its source lay in any one of the structures implicated to the exclusion of neighboring structures (except in case of hordeola, chalazia, etc.), and we are able in case of tumors of different types to pronounce with a remarkable degree of assurance that this or that structure is implicated or diseased. Again, corneal ulceration and corneal abscess are two distinct varieties of corneal suppuration caused by infection, and yet we find corneal ulcers closely related to corneal abscesses,—*e.g.*, traumatic ulcers which usually are of a benign or malignant type, occurring in elderly people, and when they assume their most malignant form have the yellowish color of pus, with a noticeable, opaque, yellowish, swollen margin, and in these cases we find iritis with hypopyon a frequent concomitant. The essential difference between corneal ulcers and corneal abscesses lies in the fact that ulcers are superficial, while abscesses lie in the depth of the tissues, so that in reality there is but a slight difference between then. With respect to the intraocular structures, let us see what an intimate association exists between affections found in this situation, which are usually described as separate and distinct diseases. Beginning at the vitreous, we find that a pure and simple uncomplicated case of hyalitis, inflammation of the hyaloid body or vitreous humor, is one of the rarest of ocular affections, only occurring in cases in which the vitreous contains a small foreign body which acts as a nucleus of inflammatory reaction; while, *per contra*, we very frequently find the vitreous humor implicated as a result of continuity of an inflammatory process involving contiguous structures; such for example, as choroiditis suppurativa and non-suppurativa. In retinitis, inflammation of the retina, we find in certain cases that the inflammatory process extends to the optic papilla and *vice versa*. The retina, too, by reason of its situation, is prone to become affected by reason of extension of an inflammatory process primarily implicating the choroid. That all-important structure, the lens, is one that is not prone to an isolated inflammation of its structure. A phakitis, so styled, pure and simple, without previous involvement of neighboring structures, is one of the rarest of eye diseases, and yet it is especially liable to pathological changes by means of extension of inflammatory changes from neighboring structures. The iris, by reason of its functions and its situation, is particularly susceptible to inflammatory reaction, and is seldom,if ever, implicated by a cyclitis which, however mild, is usually present in all iritic inflammations of severe type. This follows as a consequence of the intimate anatomical relationship of the iris and ciliary body. The optic nerves are also susceptible to the influence of inflammation extending from the anterior ocular structures, and *vice versa*, as is illustrated typically by neuritis ascendens and descendens, which Von Graefe first named and assigned to each its characteristic train of symptomatic phenomena; but, unfortunately, we are not always able to define positively the presence of one to the exclusion of the other; in other words, clinically, the one merges into the other, and when we consider that the optic papilla is nothing more than the intraocular termination of the optic nerve proper, we appreciate fully the tendency of upward extension of an inflammatory process which apparently primarily involves the papilla alone; and, *per contra*, with a morbid process involving the nerve-sheaths of their fibrillæ above the papilla, we readily comprehend the cause of its progression downward. Of course, it must be conceded that there are certain types of inflammation of the optic nerve in which it is possible to make a diagnosis ophthalmoscopically. Thus, in the choked disk of engorgment neuritis, when the swelling of the optic papilla is pronounced and abruptly ceases at the edge of the disk, while an intense engorgement of retinal veins co exists, a diagnosis is not difficult, but there are many transitional forms that render the diagnosis uncertain. Engorgement neuritis by the choked disk, as it is called, is such a frequent concomitant of cerebral tumors, occurring as it does in at least ten per cent. of all cases, that it would hardly be just to pass it without comment. The cerebral diseases which are complicated with optic neuritis are either focal or diffuse. The focal alterations are usually tumor formations, and give by reason of pressure rise to the choked disk, which is often the only indication of a brain tumor, and occasionlly exists for a protracted period without exciting any other positive symptoms, which serves to illustrate the importance of ophthalmoscopic examination in all such cases. Rarely, other focal lesions may give rise to optic neuritis, such as thrombosis of the sinuses, abscesses, apoplexy, aneurisms, .cysticerci and echinococcus cysts, etc.; while the diffuse affections are hydrocephalus, acute and chronic meningitis, disseminated sclerosis. Acute meningitis, hydrocephalus, and tubercles of the brain are most frequently the etiological factors in the neuritis of childhood, and these cases do not always fall under the oculist's inspection timely enough to enable him to avert the destructive atrophy which supervenes, notwithstanding his ready ability to recognize the affection.

The foregoing comments would hardly be complete without some reference to suppurative processes implicating the ocular structures generally. In accordance with the conclusions of bacteriological research, suppurative processes are ascribable to schizomycetes, and particularly to the staphylococci, first noted by Ogston and more fully described by Rosenbach. In purulent corneal inflammation fungi have been microscopically defined, either the ordinary pus fungi or fungi of a higher order, such as the aspergillus glaucus and leptothrix buccalis. A marked purulency follows corneal inoculation with such fungi which eventuates in purulent iritis and panophthalmitis, which has attributed to extension of the fungi to the deeper parts. Accepting, as we must, that the presence oj microorganisms is one, if not the chief exciting cause of suppurative inflammation, yet it by no means satisfies the indications in all cases,—*e.g.*, cases in which particles of red-hot metal have been driven into the eye, and then subsequently light up a purulent and destructive inflammation, possibly eventuating in sympathetic inflammation of the opposite eye; and the explanation here given is that the oxidation of the metal causes a chemical reaction sufficient to light up the fatal process; ay, but are the ordinary pus fungi and even the higher fungi not likewise here demonstrable? To be sure. Then we must infer that either these fungi have been introduced from without, or that they have spontaneously developed within, as a result of fermentative changes analogous to the development of the ordinary schizomycetes, or yeast plant, a process which is familiar to all, so that I am of the opinion that there is in all cases of suppuration a chemical element that is not sufficiently appreciated. This is strongly supported by our antiseptic surgery of to-day. Formerly it was considered reqisite in all cases of operations about the abdomen to resort to constant disinfection by the method of Lister; to-day we find our abdominal surgeons applying nothing but sterilized water, with far better results than ever before achieved with all their antiseptic precautions. And what is the rationale of the action of sterilized water under such circumstances? Simply the removal of all organic *debris*, such as blood, disorganized tissue-elements, etc., which would otherwise undergo disintegration, softening and putrefraction, favoring infective suppuration, and at the same time eliminating the irritative effects of the chemical constituents of the various disinfectants.

Relative to the question of transmission of the specific poison of sympathetic ophthalmia, we must ascribe due weight to the conclusions reached by Deutschmann, who found that if certain fungi, staphylococci, or micro-organisms were introduced into the eye, they would travel backward along the optic nerve-sheaths to the base of the brain, and thence crossing to the opposite nerve reach the opposite eye, thus lighting up sympathetic ophthalmitis, or at least an inflammation of the intraocular end of the optic nerve. Regarding the eyeball as simply an expanded bulbous extremity of a nerve with altered characters to meet the functions of its physiological necessity, in order to explain sympathetic ophthalmitis on another basis, it only remains requisite to add the elements of irritation, which in such cases are usually complicated with infection.—*International Medical Magazine.*

OBITUARY.

HERMANN VON HELMHOLTZ +.

Born August 31, 1821. Died September 28, 1894.

By D. W. Zehender (*Klin. Mtsblt. f. Aughlk.*).

In undertaking to lay with these lines our wreath *in memoriam* upon the still newly-made grave of von Helmholtz, we cannot hope to say something more recent, or better, or more glorious about him, than has by this time been said or written by others, or will perhaps in future yet be said and written; we only desire to draw the attention of our readers to the post-prandial speech delivered by him at the celebration of his 70th birthday, in which he laid bare his own self before the inner eye of his audience in a much better, truer and more unvarnished manner than another could have done it. This post-prandial speech is a short autobiography, to which perhaps no other one can be compared. Hardly ever has an autobiography been written so objectively, so critical, so devoid of all artificial ornamentation.

The great deceased begins with a description of his youth which was often marred by disease and insists particularly upon the diligence and pleasure with which he early took up the study of physics, and remarks, that, then even, he considered the laws of natural events to be the magic key which would bring power over nature to its possessor. That he always clang to this idea later on, and that under the existing circumstances this led to an impetus of passionate diligence! Whenever a new thought in the realm of science awoke within him, he endeavored to follow up the reasons leading to the birth of this thought, as far as possible, and to listen to its very beginning. His external life, or the external occurrences during life he hardly mentions.

We ophthalmologists are insolubly, firmly attached to Helmholtz through his invention of the ophthalmoscope, which in the development of ophthalmic science, marks the line between old and modern ophthalmology as sharply and plainly, as it can possibly be thought.

Helmholtz calls the invention of the ophthalmoscope "his most popular scientific achievement" and acknowledges that the construction of this instrument has been of the greatest importance in giving him his position in the eyes of the world. However, von Helmholtz has repeatedly stated, that luck had played a disproportionally much greater part in this than "merit" and that he owed it to the fact that he, according to his father's wish had studied and for a time practiced medicine, the great pleasure, of having been the first to see clearly a living human retina. By his medical work his thought became directed to the wants of practical medicine to a greater degree, than it was usually the case with physicist who principally worked on theories. This was especially the case with his friend Ernst Bruecke, who had studied in the most diligent and painstaking manner the phenomenon of the glowing of the eyes (*Augenleuchten*), without making a step towards utilizing practically what was valuable in his researches. Helmholtz says—and we think he is not quite right in this—that "only a hair's breadth really separated Bruecke from the invention of the ophthalmoscope." He evidently lacked the bold penetration into the future, which Helmholtz possessed. K. von Erlach who had accidentally seen the phenomenon of glowing and rightly interpreted its cause, was, perhaps, just as near to the invention of the ophthalmoscope as Bruecke was. If von Erlach had not looked upon the phenomenon of glowing as a worthless toy, and, if the thought of the possibility of making visible by means of it the interior of the eye had come to him, he would have been much nearer this important discovery. Certainly we can hardly decide, which one of these two men approached nearer to the invention of the ophthalmoscope, and which one lagged behind.

I may be pardoned for here relating a little incident, which thus far has never been related and has remained unknown.

While in the summer of 1851 Albrecht von Graefe, before entering upon his glorious practical career, stayed at Vienna in order to perfect his medical education, he collected around him a circle of young physicians, to whom he opened the treasure-house of his, even then, rich ophthalmic knowledge. There was in this circle a certain young Dr. Hirsch, who had just finished his medical studies at Kœnigsberg, and like all of us, had come to Vienna for further perfecting himself. At the close of his little private course of lectures on ophthalmology von Graefe said: "One thing alone is still wanting, and this is the possibility to look into the interior of the eye." Dr. Hirsch said: "This invention has just been made by a young professor at Kœnigsberg, by the name of Helmholtz." It seems to me from this, that we may assume that A. von Graefe had come much nearer to inventing the ophthalmoscope than either Bruecke or von Erlach. Nobody will doubt, that von Graefe possessed the necessary knowledge and ability to solve a problem which engaged his mind. Who knows, whether, if Helmholtz had hesitated a little longer with his invention, von Graefe would not have preceded him?

Meanwhile, however, little or nothing depends on who came close or closer to the invention of the ophthalmoscope, and how near he approached to it. The only important question is, who really made the invention. At a festive occasion Donders once said definitely in all our names: "The invention of the ophthalmoscope—the new instrument, which marks the dawn of a new era in ophthalmology—belongs to Helmholtz, and to Helmholtz alone!"

This word will not be forgotten as long as ophthalmic science will live on this earth.

The happy solution of the question of the accommodative act in the human eye by Helmholtz, which question, since Keppler, had agitated the greatest mathematicians, physicists physiologists, needed an incomparably larger amount of knowledge, of acuteness of mind and of inventive talent.

The ophthalmoscope concerned a question which had never before been mooted; the accommodation, however, was a question which, though raised for more than two hundred years, had thus far remained unsolved. Practically speaking, the invention of the ophthalmoscope has, indeed, been far more fruitful and has therefore become more universally known.

The most valuable heirloom, which Helmholtz leaves to the ophthalmologists is his "Physiological Optics," a work which for all times must remain an example of earnest labor,and for many years a mine for scientific research.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. NOVEMBER, 1894. No. 11.

ORIGINAL ARTICLES.

A CASE OF GUMMA OF THE SCLEROTIC.

BY J. J. KYLE, MARION, IND.

Mr. S., 22 years old, consulted me on June 10 last on account of a marked inflammation and pain in the right eye. History of syphilis of 16 months standing, in fact the patient was at that time taking treatment for syphilitic abscess of glands of the neck. Upon examination I found two well marked gummata of the iris, one on the inferior pupillary margin and the other on the outer margin approximating the transverse axis.

I gave the patient proto-iodide of mercury in conjunction with iodide of potassium.

I also made a subcutaneous injection of 3 drops of a solution of hydrarg. bi-chloride, one in one thousand, into the ocular conjunctiva; not having a suitable needle, I did not continue the injection. Patient was discharged after six weeks, showing no trace of a gumma.

On October 7, patient again presented himself complaining of pain in right eye. Upon examination I discovered a small white tumor on the sclerotic about the size of a wheat grain, situated near the superior corneal margin. The bloodvessels covering the tumor were congested. After the seventh day I first noticed a slight reduction in the size of the bloodvessels. The tumor then began to appear yellowish and necrotic.

On October 23, no trace of tumor appeared. Slight yellowish discoloration of sclerotic corresponding to the original seat of swelling.

On account of the previous history and appearance I pronounced the tumor gumma of the sclerotic and treated it accordingly, with proto-iodide of mercury and potassium iodide in large doses with the result as above.

Well marked cases of gumma are so rare and text books say so little, that I have taken the liberty of reporting this rare case.

THE PRESENT STATUS OF ASTHENOPIA.[1]

BY F. BULLER, M.D., MONTREAL.

Professor of Ophthalmology, McGill University; Ophthalmic Surgeon to the Royal Victoria Hospital, of Montreal.

Gentlemen.—The science of medicine and the art of surgery include so wide a range of knowledge and experience that no one man can ever hope to grasp the whole subject, or to become an expert in more than a limited area of the sea of work in which he finds himself floundering so soon as the portals of our profession have opened for his admission. For this reason specialism has become more and more of a necessity, and it is through specialism, tempered by a wider knowledge, that future progress must be made. It is, therefore, well that we can all meet together, from time to time, and compare notes, so to speak. It is helpful and encouraging to learn what is being done by workers in other parts of the same field. I, myself, should feel that I had not done my duty if I did not occasionally have some contribution to offer my colleagues in medical conclave assembled. I know the subject I have chosen for to-day will interest some, perhaps more than a few of you, because asthenopia is of such frequent occurrence that every physician must time and again meet with it in some of its manifestations. The term asthenopia is, of course, generic, and includes quite a number of visual disturbances, all of which present the salient characteristic of inability to use the eyes in near work without discomfort. The asthenope is perpetually reminded that he possesses organs of vision, and many devote a considerable portion of their time to estimating the chances of avoiding what they conceive to be an impending blindness. These gloomy forebodings are mightily strengthened by the comforting assurance of friends, and, I may add, now and again of medical advisers, that the symptoms probably indicate some serious disease of the optic nerve. The symptoms complained of vary from slight pricking or burning sensations in the eyes themselves to severe distress in or about the eyes, or to widely-extended and sometimes violent perversions of sensation, such as frequent and intense headache, pains in the back of the neck or spine, giddiness, nausea, and in some instrances attacks of vomiting, when the use of the eyes is persisted in. There is, in fact, so far as I am aware, no purely functional disease capable of causing a more genuine and persistent distress than is suffered in the severer forms of asthenopia. Taking this affection in its widest sense, I am under the impression that more than half the entire time and attention of ophthalmic surgeons is devoted to discovering the causes, and finding means for the relief of this class of patients. If I may be permitted to express another general impression, it is to the effect that asthenopia is more prevalent on the North American continent than elsewhere. I am aware, however, that general impressions are often wanting in scientific accuracy, and on closer study may prove to be erroneous. This impression is derived from two sources. First, from personal observation both in Europe and America; and, second, from the fact that the American literature of this subject during the last twenty years shows more minute attention has been given to this department of ophthalmic surgery in America than it has recived in any other country. Twenty years ago, if one may judge by the text-books of ophthalmology of that period, only two forms of asthenopia were recognized by ophthalmologists. First, accommodative asthenopia as met with in hyperopia and astigmatism; second, muscular asthenopia, such as occurs when there is insufficiency of convergence, notably in certain cases of myopia. A very brief discussion of these two forms seems to have satisfied the writers of ophthalmic treatises in those days that they had done ample justice to the subject. I could name many European authors of much later date who seem to have advanced no further in this direction. I do not think any one can practise ophthalmology very long without discovering that there are many persons who present no appreciable error of refraction, and no fault in convergence, but are, nevertheless, tormented by difficulty in using the eyes in near work, and by other functional disturbances associated with the act of vision, and there are others in whom, when an error of refraction has been ever so carefully corrected, little or no relief from the asthenopic symptoms is obtained. These circumstances have necessarily led to a closer study of the subject, with the result that we are now able to recognize quite a number of conditions other than those already named, which give rise to asthenopic manifestations. The errors of refraction are, of course, the most frequent source of asthenopia. Hyperopia, chiefly on account of the demand that this condition makes on the mechanism of accommodation; astigmatism, the same, with the additional disturbing element of imperfect retinal images, which nature abhors not less than she does a vacuum, but which the unassisted eye is wholly unable to correct. Myopia may give rise to asthenopia also, but not so often as to the former conditions. The asthenopia of myopes is due either to disassociation of the functions of accommodation and convergence or to the increased difficulty of adequate convergence when the antero-posterior diameter of the eyeball is considerably increased, as it always is in the higher grades of axial myopia.

---

[1] Read before the Canadian Medical Association at St. Johns, N. B., August 23, 1894.

It is not my purpose to discuss the subject of errors of refraction and their correction; suffice to say that asthenopia associated with any considerable error of refraction, and sometimes even with comparatively trivial errors, will generally disappear when these are suitably corrected. If not, some fault in the equilibrium of the extra-ocular muscles will commonly be discovered when carefully sought for. In some instances the refractive error has of itself induced a false state of equilibrium, or rather a defective equilibrium, a perverted muscular habit, so to speak, which must be overcome before the optical correction can be worn with comfort, and perseverance in the use of the glasses selected for several days or weeks may be necessary before complete relief is obtained. There is, however, no reason why a pair of eyes presenting considerable error of refraction, or any error of refraction, small or great, should not also have some muscular fault quite independently of the refractive error. This circumstance has evidently been everlooked by those who claim that faults of equilibrium always disappear with correction of the associated refractive error. I have observed many cases in which the most exact correction, worn for months and years, has utterly failed in this respect. That there are muscular faults capable of inducing asthenopia in emmetropic eyes is a matter of every-day experience, and it goes without saying that such cases are beyond the scope of either spherical or cylindrical glasses. From this fact we are justified in assuming that muscular faults are only susceptible of relief by correction of refraction, or defects in accommodation in so far as they happen to be directly dependent on optical defects, or some departure from the normal in the mechanism of accommodation.

It is somewhat remarkable that, although for nearly half a century no one has seemed to doubt the existence of asthenopia from the defective power of convergence or, as is commonly and loosely stated, insufficiency of the internal recti, yet it is only within the past few years that attention has been directed to faulty action on the part of the other five pairs of extra-ocular muscles, and this notwithstanding the fact, so well and so long understood, that an impairment in the functions of any one of the twelve extra-ocular muscles necessarily unbalances all the others. Now, it has been found that insufficiency of divergence is a much more common defect than that of convergence, and, when present, no less capable of inducing visual disturbance than is the latter. Faults in the vertical movements of the eyes are also by no means infrequent, and may occasion extreme distress, or asthenopia associated sometimes with widely extended reflex phenomena. Owing to the limited power of rotating the eyeballs possessed by the superior and inferior recti, comparatively trivial faults in these muscles are liable to create much disturbance. Just as in the case of refractive errors, there is no constant or direct relation between the degree of error and the inconvenience it may induce. So much depends on the stability of nerve-power, occupation, state of health, and general surroundings of the individual that each one must be dealt with according to circumstances, and quite independently of hard-and-fast rules. Only this, that the conscientious ophthalmic surgeon need not hesitate to adopt whatever means of treatment seem to him the most likely to give the patient certain and permanent relief. Sometimes all that may be necessary will be change of occupation, or such treatment as will tend to invigorate or restore the general health. In other cases the use of prismatic glasses suitably adapted will suffice, but in a certain number of muscular faults permanent relief can be obtained only by surgical interference of a kind that will establish more or less completely an equilibrium of the ocular muscles. This may be extremely simple and easy of achievement, or it may be a most difficult and tedious undertaking. Under no circumstances should an operation on the extra-ocular tendons be undertaken unless the indications for its performance are clear and definite, and even then the result will largely depend on the skill and judgment of the operator. There are a few cases of asthenopia which seem to originate in undue weakness of the ciliary muscle, cases in which apart from hyperopia or presbyopia the near point of accommodation is removed beyond its proper limits, and others in which near vision may be perfect for a short time, but cannot be maintained owing to weakness of the ciliary muscle. In these the local use of eserine or pilocarpine will be of service, so also will general roborant treatment. Now and then, among elderly people, we meet with asthenopia apparently caused by loss of transparency in the refractive media, such as incipient cataract. In these it is probable that imperfect retinal images create a reflex disturbance. Reflex asthenopia of a different kind is by no means uncommon. We meet with it often in connection with nasal catarrh and nasal deformities causing pressure of opposed mucous surfaces, surfaces which, under normal conditions, are never habitually in contact with each other. Two such conditions are to be especially noted. First, an hyperplastic or polypoid condition of the mucous membrane covering the anterior extremity of the middle turbinated; second, a spine projecting from the septum and coming in contact with the inferior turbinated. Both of these conditions require surgical interference for their relief.

Another cause of reflex asthenopia is found in the teeth. Carious teeth with ulcerated roots, especially in the upper jaw, are to be looked for, and set to rights or removed. Sometimes disease of the roots of the teeth will, for a time at least, elude discovery and make the diagnosis perplexing. So, too, disease of the antrum and perhaps of the other facial sinuses should be excluded in making a diagnosis. By far the most frequent, troublesome, and persistent reflex asthenopia is met with in young or middle-aged women who have suffered for a considerable time from uterine troubles; some of these recover from their asthenopia when cured of the uterine disease. I have already alluded to these cases at some length in a paper read before this society by Dr. Alloway at a former meeting, and will, therefore, refer you to that paper for what I might say in this connection.

There remains for consideration a considerable class of asthenopes whom we cannot place in any of the groups of cases I have mentioned. These last we can only ascribe to that ill-defined condition known as neurasthenia, but why some neurasthenics without discoverable ocular defect should be able to use their eyes with comfort and others only with difficulty, amounting perhaps to total disability, for near vision is one of the problems we have yet to solve. There are, moreover, some persistent cases of asthenopia of unknown origin which present none of the general symptoms supposed to be characteristic of neurasthenia. For these we can only hope to find a more definite place for their classification after further careful study.

I do not think we are justified in assuming that there is such a condition as asthenopia of centric origin until we can define the centric lesions upon which it is supposed to depend, or which are known to give rise to asthenopic symptoms. There may be cases traceable to known forms of dyspepsia, but I have never, to my knowledge, met with such, and I am not aware that dyspepsia, one of the commonest of all human ailments, is associated with asthenopia so often as to justify the assumed relation of cause and effect between them. It is likely that time will unravel the difficulties of diagnosis which surround the remaining sbscure cases of asthenopia, but, for my own part, I prefer an attitude of agnosticism towards all that I cannot understand rather than the easy way of concealing want of knowledge under the guise of unmeaning phraseology.

SOCIETY PROCEEDINGS.

MEETING OF THE BRITISH MEDICAL ASSOCIATION HELD AT BRISTOL, 1894.

Section of Ophthalmology.

The meetings of this Section were held in the Medical Lecture Theatre of the School. After a few introductory remarks the President, Mr. F. R. Cross called upon Mr. Simeon Snell to read his paper on "The Relations of Occupation to Eyesight," a subject on which information had been especially invited. Injury to sight from occupations involving exposure to light, heat, dust and poisonous gases was dealt with, and suggestions were made for preventing ill effects.

This was followed by a paper by Dr. Lindsay Johnson, who had made a special study of the well known failure of vision of the men employed in Salviati's Venetian Glass Works. His investigations led him to the conclusion that the partial optic atrophy to which the amblyopia was due, resulted from the furnace, and was not in any way attributable to the heart.

Mr. R. W. Doyne spoke of the influence of education on eyesight, the ill-effects of which he thought were exaggerated. He especially insisted on the harm often done by the injudicious use of blue and neutral-tint glasses.

In the discussion which followed allusion was made to various trades which are injurious to the eyes.

Mr. Ernest Clarke brought forward a resolution to the effect that it was desirable that employers of labor should be compelled to see that their men were provided with *and used* proper precaution for preventing injury to their sight. It was however, decided that, though right in principle, the proposition was premature.

Prof. Landolt detailed some rules which he used for determining the affected muscle in cases of diplopia. He showed a very convenient chart, devised by himself, which indicates at a glance the affected muscle and the position of the false image.

Mr. Risien Russell gave a very clear and interesting account of a series of experiments which he had performed on monkeys with a view to determining the cortical brain-centers for eye-movements. Until he made these experiments only associated lateral movements had been obtained, or, at any rate, they had very largely predominated. He concurred with the view suggested by Dr. Hughlings Jackson that this was due to lateral movements being of first importance to the life of the animal. By means of dividing certain of the ocular muscles and thereby eliminating the possibility of lateral movements, and by using suitable stimuli, Mr. Russell had been able to discover the cortical centers for upward and downward movements of the eyes, and also for convergence.

The second meeting of the Section was commenced by Mr. Juler reading a paper on "The Diagnosis and Treatment of Catarrhal, Purulent and Granular Ophthalmia," in which he insisted on the use of the microscope in searching for gonococci and trachoma-cocci.

Mr. Kenneth Scott advocated a 2 or 4% solution of cyanide of mercury as a treatment for trachoma more efficacious and less painful than perchloride, which is also a less stable salt than the cyanide.

Dr. Hermann Knapp advocated "expression" which his forceps as a valuable auxiliary to other methods.

Other speakers stated that sulphate of copper was the best application. Allusion was made to the difficulty of distinguishing true trachoma by microscopic sections of the conjunctiva.

Mr. John Griffith read a paper on "The Secretory Function of the Ciliary Body," which was illustrated by excellent drawings and microscopic sections. In one of the latter the radial muscular fibres of the iris (pupil-dilator fibres) were well shown. By means of a modification of the bleaching process introduced by Treacher Collins two years ago, Mr. Griffith was able to show much evidence that the aqueous humour is secreted by the large ciliary processes and not by the glands of the ciliary region described by Mr. Collins. These latter do not exist in albino rabbits, and therefore Mr. Griffith suggests that they control the amount of the uveal pigment.

Among the papers of the third day was one by Mr. G. E. Walker, who explained a new operation consisting of numerous punctures or incisions through the sclera-corneal junction for cases where Saemisch's section had been hitherto practised.

It was at one time feared that the International Ophthalmological Congress to be held in Edinburgh a week later than the Association meeting would render this section needless, or, at all events, uninteresting. This, however, was not the case for not only were there numerous and important papers, but the attendance was above the average, and on one occasion there ware 46 present.—*Bristol Medieo-Chirurgical Journal.*

SELECTIONS.

SCOPOLAMINE.—ITS VALUE IN OPHTHALMIC PRACTICE.

BY W. HARVEY SMITH, A.M., M.D., C.M.,

House Surgeon to the Manhattan Eye and Ear Hospital.

The attention of the medical profession of this country has recently been drawn by Dr. Hasket Derby, of Boston, and Dr. Pooley, of New York, to the value scopolamine as a mydriatic. The use of this drug in America seems to have been very limited, and comparatively little information can be obtained regarding its exact properties and action and its worth compared with the standard mydriatics, atropine and homatropine.

Scopolomine is obtained from the roots of *Scopolia atropoides*, and is isomeric with atropine, hyoscine, duboisine, diaturine, and the other members of the tropeine series. By some authorities it is considered to be identical, not only in formula but in physiological action, with hyoscine, but on this point conclusive proof is lacking.

It is used in aqueous solutions, which undergo decomposition much less readily than similar solutions of atropine and homatropine.

Koebert's experiments have shown that "this substance is opposed in general physiological action to atropine; it does not stimulate the cerebral cortex like atropine, but paralyzes it."

According to Dr. Ræhlmann (*Münch. med. Wochenschr.*) "scopolamine excels as a mydriatic and antiphlogistic all other tropeines in use. It is similar to hyoscine in strength of mydriatic action, without sharing its disadvantages; it has no untoward effects, does not disturb the appetite, nor does it cause, in normal doses, dryness of the throat, nervous restlessness. reddening of the face, or frequent pulse, as in the case of atropine.

"The antiphlogistic and anodyne effect of scopolamine is not second to that of atropine, a steady diminution of the hypopyon being observed in five cases after its application. It does not affect intraocular pressure, and will therefore, in contrast to atropine, be readily borne where there is a pathological increase of the same.

"Scopolamine hydrobromate is used in one-fifth and one-tenth per cent. solutions, which are said to correspond with one-half and one per cent. atropine solutions."

In February last, Dr. D. B. St. John Roosa introduced the use of scopolamine into the Manhattan Eye and Ear Hospital in the treatment of his clinic and indoor patients, and since that time it has had a fairly general trial throughout the hospital, and its value has been pretty accurately determined in pathological and ametropic conditions, particularly the latter. Careful observations have been made in about twenty-five refraction cases, with the view of ascertaining the rapidity and thoroughness with which the accommodation can be paralyzed and the pupil dilated by scopolamine, the best method of using the drug, and the minimum strength of solution which will produce satisfactory results, physiological and toxic effects, and the duration of mydriasis and cycloplegia.

In pathological cases reliable conclusions as to the beneficial or deleterious effects of scopolamine have been difficult to arrive at, owing to the fact that it is no easy master to decide whether an abatement or an increase in the severity of an ocular disease (where only a limited number of cases can be utilized for experimentation) is due to the use of a certain drug.

The strength of the solutions employed in both pathological and refraction cases was usually one-fifth or less frequently one-tenth per cent., one or two drops being instilled into each eye until four or five instillations had been made. Maximum dilatation of the pupils was produced in all refraction cases in from ten to twenty-five minutes.

The amplitude of accommodation, as indicated by the number and distance at which Jaeger test type could be read by the patient, showed a decrease directly proportionate to the rapidity with which the pupil dilated; at the end of twenty or thirty minutes such spherical glasses were placed before the patient's eyes as would bring the near point to about twelve inches, and in nearly all the cases examined, where the perceptive functions of the eye were not at foult, the distance on each side of the point of focus at which Jaeger No. 1 could be read was from one to two inches—in other words, about the same range that we have found to be present in aphakia, and in eyes that have been fully atropinized. In the majority of patients the effect of scopolamine on the heart was manifested within from five to ten minutes by a gradual diminution in the rate of the pulse, which was lessened in three cases as much as thirty to the minutes, and was often characterized by more or less softness and compressibility. In a few cases the pulse rate was increased or became irregular in rhythm. The distant vision, which was recorded every five minutes, showed the usual diminution, the amount depending upon the variety of ametropia, the strength of the solution, and the frequency with which it was instilled. In the refraction cases toxic symptoms were induced eight times, mostly at first, as no attempt was made, by everting the puncta or pressing upon the nasal ducts, to prevent the solution from running into the nose; later on these precautions were taken, thus accounting for the infrequency of poisonous symptoms in the last fifteen cases. These symptoms resemble very closely those produced by atropine, dryness of the throat being usually the first indication of toxic effect; this came on in from fifteen minutes to an hour and lasted from four to thirty six hours. Following this was observed marked muscular weakness, with unsteady, staggering gait and great dizziness; these symptoms manifested themselves within an hour, the duration being from twelve to twenty-four hours. Loss of appetite, with considerable nausea, lasting a day, was observed in two cases. Some patients became very restless, and others, the majority, exhibited the opposite condition; in three cases great drowsiness came on within an hour; in one case the primary effect of the drug was exhilaration, followed in an hour by depression, the patient becoming very sleepy and heavy. The taste of the drug was often complained of and was described as being "nasty and bitter." Flushing of the face was observed only twice.

In cases of iritis, kerato-iritis, hypopyon, episcleritis, etc., where scopolamine was used, its effects were very satisfactory, but it seemed to possess no advantage over atropine. In a patient who had always been very susceptible to the influence of atropine the instillation of one drop of the one-fifth per cent. solution of scopolamine hydrobromate was sufficient to produce considerable flushing of the face. We have been unable to make any observation which would support the claims made by Ræhlmann that scopolamine will not increase tension. For purposes of examination or operation the drug has been found specially useful, owing to the rapidity of mydriatic action, one or two drops of the one-fifth or one-tenth per cent. solution being sufficient to fully dilated the pupil in from ten to twenty-five minutes. The average duration of cycloplegic and mydriatic effect we have found to be from five to eight days. Comparatively few tests with the weaker solutions have been made, but the results so far obtained from the use of a one-tenth per cent. solution have been satisfactory. In the case of a little girl with spasm of accommodation, seven instillations in sixty hours completely paralyzed the ciliary muscle, the effect lasting for six days.

In all the refraction cases examined, the results have been practically the same, so far as rapidity and thoroughness of action and duration of effect are concerned. A detailed account of two or three cases will therefore be sufficient to indicate the advantages or disadvantages which, in our experience, the drug possesses.

CASE I.—Mrs. G., aged thirty-five, examined February 25, 1894. Complains of inability to do near work for any length of time, has headache more or less constantly, and eyes have of late felt sore and tired; no external ocular disease.

V., O. D. $^{20}/_{\text{xxx}}$; $^{20}/_{\text{xx}}$ w. + 1.0 D. s. $\bigcirc$ + 1 D. cyl. ax. 90°.

V., O. S. $^{20}/_{\text{xx}}$; $^{20}/_{\text{xx}}$ w. + 1.0 D. s. $\bigcirc$ + 0.50 D. cyl. ax. 90°.

Javal, O. D. 1.5 D. ax. 90°, 180° W. R. O. S. 1 D. ax. 90°, 180° W. R.

Jaeger N. 2 at six inches.

Ophthalmoscope, O.D.—$\left|\begin{array}{l}+5\\ —\ +4.\\ \ \end{array}\right.$ O.S.—$\left|\begin{array}{l}+4.\\ —\ +3.\\ \ \end{array}\right.$

Fundi normal, refracting media clear, some spasm of ciliary muscle. Patient was tested three weeks ago under atropine, result being:

V., O. D. $^{20}/_{\text{cc}}$; $^{20}/_{\text{xxx}}$ w. + 3 D. s. $\bigcirc$ + 1.5 D. cyl. ax. 90°.

V., O. S. $^{20}/_{\text{cc}}$; $^{20}/_{\text{xx}}$ w. + 3.5 D. s. $\bigcirc$ + 0.75 D. cyl. ax. 00°.

Sol. scopolamine hydrobromate one-fifth per cent. instilled, detailed in the accompanying table.

Patient complains of a little dizziness w.+5 D., reads Jaeger No. 2 at eleven to fourteen inches.

25 min.—Ophthalmoscope + 4 D. each, spasmodic action of ciliary muscle has ceased.

Retinoscopy, O. D. —$\left|\begin{array}{l}+4.\\ —+5.\\ \ \end{array}\right.$ O.S.—$\left|\begin{array}{l}+3.5.\\ —+4.\\ \ \end{array}\right.$

30 min.—V., O. D. $^{20}/_{\text{cc}}$; $^{20}/_{\text{xx}}$ w. + 3.5 D. s. $\bigcirc$ + 1. cyl. ax. 90°.

V., O. S. $^{20}/_{\text{cc}}$; $^{20}/_{\text{xx}}$ w. + 3.5 D. s. $\bigcirc$ + 0.75 D. cyl. ax, 90°.

Reads Jaeger No. 1 from nine to eleven inches w. + 4 D. added to above correction in each eye.

35 min.—Patient complains of great dizziness, muscular weakness, dryness of the throat and headache; is unable to walk straight, and appears to be very restless.

February 21.—Patient returned to hospital to-day stating that above-mentioned symptoms lasted for twelve hours, and that, in addition, she had experienced considerable nausea and impairment of appetite.

February 22.—With same correction as on February 20, range for Jaeger No. 1 is nine to eleven inches; pupils widely

TIME	INSTILLATION.	PUPILS.	ACCOMMODATION.	VISION.
Min.				
0	Gtt.ij. in each eye.	O.D. 4.5 mm., O.S. 4.5 mm.	Jaeger No. 1 at 6 in. to 13 in.	O.D. $^{20}/_{\text{XL}}$, O.S. $^{20}/_{\text{XX}}$.
5	" "	" 5.5 " " 5.5 "	" " 1 at 8 in. to 15 in.	" $^{20}/_{\text{XL}}$, " $^{20}/_{\text{XXX}}$.
10	" "	" 5.5 " " 5.5 "	" " 1 at 14 in. to 18 in.	" $^{20}/_{\text{L}}$, " $^{20}/_{\text{L}}$.
15	" "	" 6.5 " " 6.5 "	" " 13 at 20 in.	" $^{20}/_{\text{C}}$, " $^{20}/_{\text{C}}$.
20	" "	" 7.0 " " 7.0 "	" " 13 at 20 in.	" $^{20}/_{\text{CC}}$, " $^{20}/_{\text{CC}}$.
25		" 7.0 " " 7.0 "	" " 14 at 20 in.	" $^{20}/_{\text{CC}}$, " $^{20}/_{\text{CC}}$.

TIME	INSTILLATION.	PUPILS.	ACCOMMODATION.	VISION.
Min.				
0	Gtt.ij. in each eye.	O.D. 4.0 mm., O.S. 4.0 mm.	Jaeger No. 2 at 6 inches.	O.D. $^{20}/_{\text{XXX}}$, O.S. $^{20}/_{\text{XX}}$.
5	" "	" 4.0 " " 4.0 "	" " 4 at 8 "	" $^{20}/_{\text{L}}$, " $^{20}/_{\text{L}}$.
10	" "	" 5.5 " " 6.5 "	" " 10 at 12 "	" $^{20}/_{\text{LXX}}$, " $^{20}/_{\text{LXX}}$.
15	" "	" 6.5 " " 7.0 "	" " 13 at 12 "	" $^{20}/_{\text{C}}$, " $^{20}/_{\text{C}}$.
20	" "	" 7.5 " " 7.5 "		" $^{20}/_{\text{CC}}$, " $^{20}/_{\text{CC}}$.

dilated. Toxic symptoms have subsided and patient feels perfectly well.

February 28.—Pupils four millimeters each.

O. D. w. + 3 D. s. $\overset{\frown}{\smile}$ + 1 D. cyl. ax. 90°.

O. S. w. + 3.5 D. s. $\overset{\frown}{\smile}$ + 0.50 D. cyl. ax. 90°.

Patient reads Jaeger No. 1 at ten inches without correction. Distant V., O. D.=$^{20}/_{\text{L}}$, O. S.=$^{20}/_{\text{XL}}$; with correction =$^{20}/_{\text{XX}}$ both.

When last seen patient was wearing the above correction constantly, and she states that the glasses have completely relieved her asthenopic symptoms.

This case demonstrates how readily toxic effects can be produced, and would disprove the statements made by the advocates of the use of scopolamine that it does not cause nervous restlessness, dryness of the throat, or disturbance of appetite.

CASE II.—John M., aged ten years, has ten degrees of alternating convergent strabismus of two years' duration.

V., O. D. $^{20}/_{\text{XL}}$; $^{20}/_{\text{XX}}$ w. + 2 D. s. $\overset{\frown}{\smile}$ + 0.50 D. cyl. ax. 90°.

V., O. S. $^{20}/_{\text{XX}}$; $^{20}/_{\text{XX}}$ w. + 3.5 D. s. $\overset{\frown}{\smile}$ + 0.50 D. cyl. ax. 90°.

Jaeger No. 1, six to thirteen inches.

Javal, O. D. and O. S. 1 D. ax. 90°, 180 W. R.

Ophthalmoscope, O. D. + 3 D.; O. D. + 6 D. More or less spasm of ciliary muscle renders ophthalmoscopic estimation of refraction inaccurate.

Scopolamine used as in former case, with the difference that the nasal ducts were compressed during and for a few minutes after each instillation of the drug.

With + 10 D. before each eye Jaeger No. 1 is read from six and a half to eight inches.

Ophthalmoscope, + 8 D. each. No blurring.

$$\text{Retinoscopy, O. D. and O. S.—}\left|\begin{array}{l}+7.\\ -\,+7.\end{array}\right.$$

V., O. D. $^{20}/_{\text{CC}}$; $^{20}/_{\text{XX}}$ w. + 7 D. s.

V., O. S. $^{20}/_{\text{CC}}$; $^{20}/_{\text{XX}}$ w. + 7 D. s.

Accepts no cylinder. Visual axes parallel. No toxic symptoms induced. The subsequent behavior of the ciliary muscle and iris was not determined, as patient could not return for examination.

This case illustrates the rapidity and thoroughness with which paralysis of the accommodation can be produced by scopolamine, and shows that the danger of toxic effect is reduced to a minimum by taking the precautions mentioned above.

CASE III shows in a typical manner the effect of the drug upon the pulse, which before the first instillation was 92; five minutes after the first instillation was 87; five minuter after the second, 80; five minutes after the third, 73; five minutes after the fourth, 69.

The pulse was regular throughout, but became soft and compressible within ten minutes after the drug had been used.

Had it been possible to compare the action of other mydriatics on patients upon whom the scopolamine had been tried, the deductions might have been more absolutely reliable; still, I think the observations so far made justify us in coming to the following conclusions:

1. That the toxic effect of scopolamine used in one-tenth and one-fifth per cent. solutions are easily produced, but can readily be avoided if the lids be everted or the nasal ducts compressed at the time of instillation.

2. That in diseased conditions of the eye scopolamine is quite as useful a drug as atropine.

3. That in refraction work complete and thorough paralysis of accommodation with the maximum of mydriasis can be produced in from twenty minutes to half an hour, where the drug is used *coup sur coup*, and that the duration of its effect is from five to eight days.

4. That its greatest value lies in the rapidity of its action, which renders it specially useful for purposes of examination in refraction cases and in diseased conditions of the interior of the eye.—New York *Medical Journal.*

INFLUENCE OF GENERAL MALADIES UPON THE ORGANS OF VISION.

BY PROFESSOR PANAS.

We find that a large number of patients, suffering from various maladies, develop certain visual troubles as direct consequences of their diseased condition. These phenomena are observed so constantly that ophthalmoscopic examinations of patients seem likely to become almost as necessary as auscultation or percussion. The facts are not wanting to study this important matter with benefit, and in using them I hope to be useful not only to ophthalmologists, but to those who practice in general medicine.

Retinitis hæmorrhagica is a common form of a manifestation in the eye, of diseases affecting other parts of the system. Among its characteristic lesions are a hæmorrhagic plaque situated at the inferior part of the retina a short distance from the papilla, and numerous punctiform petechiæ disseminated here and there between the large white plaques which cover the greater part of the center of the eye. The petechiæ do not always and absolutely accompany the presence of the affection, but retinal hæmorrhage very often depends upon an inflammatory lesion or retinitis. The signs are hæmorrhages, hyperæmia and œdema of the papilla, white plaques of different forms and aspects, and later the presence of pigmented spots. They are seated chiefly in the layer of the optic fibres; it is there only that the vessels are of sufficient volume to produce this kind of hæmorrhage. On close examination we see abundant radiations around a central spot, and the hæmorrhage seems to divide one of the retinal vessels. However the character of the hæmorrhage would appear different in a more profound part, such as the internal layer; such a spot is circular, less protuberant and without peripheral radiations. A second important sign is œdema with hyperæmia of the papillæ, or papillary stasis. The optic nerve is then presented by a reddish grey spot, scarcely distinguishable from the neighboring parts. Its borders are diffuse and characterized here and there by radiations which are more apparent. At its center we find, instead of clearly defined vessels, vessels which are irregularly varicosed. The anatomical character and ophthalmoscopic aspect of these lesions give us the means of recognizing a hæmorrhage retinitis, but do not give us its origin. An important point is sometimes furnished by the seat of the lesions. As a general rule when we find an unilateral retinal apoplexy, especially at the left, and one that is limited to the posterior pole, with central scotoma, and when there is no notable trouble with the papilla, we may expect to discover a cardio-vascular affection. If the heart and the vessels are examined, lesions will be found which are characteristic of atheroma, or, it may be, of senile alterations. The manifestations of a dyscrasia are ordinarily bilateral and more diffuse. The petechiæ may be found in one eye only, but its fellow will soon be attacked. This explains why the lesions upon one eye are often more strongly marked than upon the other.

In a group of retinites from dyscrasia, those which have an albuminuric origin are by far the most frequent. It might be said that 90 cases in 100 of hæmorrhagic retinitis are from this cause. There is no relation, however, between the quantity of albumen found in the urine and the gravity of ocular lesions. This is rather to be seen in chronic interstitial nephritis. Pregnancy is a relatively frequent cause of albuminuric retinitis and the lesions often accompanying eclampsia. Ordinarily the troubles do not appear until toward the end of gestation, and they may be limited either to hæmorrhage or to papillary œdema. All of these signs may be missing; if so, we have to do with the amblyopia of pregnancy, which relieves the patient from a cerebral manifestation of the eclamptic state. In pregnant women, amblyopia, with or without retinal lesions, does not always bear the grave prognosis which we derive from the albuminuric retinites. In a certain number of cases it is curable. One case is reported of a woman who was attacked nine times with retinitis during her pregnancies, and was at last definitely cured. The lesions are sometimes caused by scarlatina, and still more frequently by saturnism. The pigmented plaques, particularly when seated near the equator of the eye, indicate that the malady has entered into a regressive period. They are useful from a prognostic point of view.

The course of albuminuric retinitis is insidious, and may be absolutely latent. The patient feels no visual trouble in such cases, and we are often astonished in our ophthalmoscopic examinations to find the lesions so strongly marked. We should make it a rule to examine frequently the eyes of albuminaria patients. If, as is most often the case, the considerable lesions in the eye do not correspond with the troubles experienced by the patients, it also happens that the patients suffer from complete amblyopia without lesions discoverable by the ophthalmoscope. These amblyopias are not very frequent and belong to cerebral, encephalopathic and uræmic troubles, and do not bring about alterations of the retina. There is also a glycosuric retinitis which is characterized by the rapid participation in the trouble, of the optic nerve. The papilla quickly becomes atrophied, a fact demonstrated by diminution in visual acuteness and dischromatopsic affections.

If apoplectic retinitis is somewhat rare in diabetes, the same remark cannot be made of optic neuritis. This is a descending neuritis, whose point of departure is in the encephalic centres, and it ends in atrophy. The ocular manifestations of diabetes placed in their order or frequency would stand: cataract, optic neuritis, hæmorrhagic retinitis.

In the group of alterations caused by dyscrasia, oxaluric, hippuric, benzuric and polyuric retinites have been observed. Often the retinal manifestations are simple hæmorrhages, without any participation of the optic nerve in the inflammatory process. All of the affections of the liver, and particularly those which accompany icterus, may cause either hæmorrhage or retinitis. Ocular rheumatism is one of the most important of the affections with which we have to do in pursuing our subject. At the beginning of the century, idiopathic rheumatic ophthalmia was still described as though the eye could be the seat of a primary attack of rheumatism somewhat as an articulation might be; and this protopathic manifestation was what we now recognize as acute glaucoma. Later, a large number of lesions of the eye under the name of sympathetic and symptomatic rheumatic ophthalmias included a great class of these affections. To-day the field of ocular rheumatism is much more limited, though it is still very considerable. Let us consider its most frequent seat, the iris. Rheumatic iritis occurs oftenest in individuals having, in all its degrees, the more or less apparent signs of the arthritic diathesis. This is the case whether they are shown in rheumatic antecedents of the articulations, acute or chronic, gouty manifestations, or cutaneous alterations. The classic type of this iritis is the serous form, while the plastic is more often of syphilitic origin. Serous iritis is characterized by a considerable effusion into the anterior chamber, the aqueous humor is augmented in quantity and somewhat disturbed, the eye is tense and very painful, while the inflammation and the chemosis are considerable enough to almost create a belief in a continued existence of scleritis. Iritic adhesions are only observed, in this affection, at a more advanced period. When they exist, they are always but slightly resistant. These very important characteristics are not the only ones to be observed. The cornea, in its posterior aspect, and particularly through the membrane of Descemet, partakes of the inflammation. It is serous iritis, and this type is much the most simple. When you meet with it, you may fearlessly affirm that it is a rheumatic iritis. But it is not very often that the characteristics are so well defined. In the intermediary forms, serous and plastic iritis become confounded in their symptoms. In order to decide the matter, it is necessary to be well acquainted with the etiological conditions which produce these forms. All of the manifestations of the arthritic diathesis do not equally give rise to rheumatic iritis. It is very rare in acute poly-articular rheumatism, whilst it is frequently associated with chronic deformatory arthritis, and with what the English call "gouty rheumatism." It is not less frequent in certain cutaneous manifestations of arthritis, and in what is generally described under the generic term of uric acid diathesis. Some writers, admitting the preponderating influence of heredity, describe an iritis and an irido-cyclitis of hereditary origin. A frequent variety is seen in that which accompanies blennorrhagic rheumatism. Here we have to do with serous iritis, and it is in this form which has been described as blennorrhagic *metastatic* ophthalmia in order to show that no direct contagion should be suspected, as in purulent ophthalmia. Serous iritis is exceptional in people who are simply blennorrhagic. It is because, as I suppose, that it is not sufficient to have blennorrhagia alone in order that these complications may be produced. It is necessary that that disease have an arthritic basis. For Prof. Fournier, who admits the special blennorrhagic infection, says all of these accidents are but diverse manifestations of the same blennorrhagic virus. This being the case, we would observe ocular or articular affections much oftener in the course of a blennorrhagic discharge. Well, statistics easily demonstrate that the proportion of these cases is very small. Is this the way in which virulent maladies conduct themselves? Does not syphilis, for example, show the greater number of these cases in the regular course of such manifestations? In reality, in order that patients shall present articular or ocular accidents, it is necessary that they be rheumatic or within the power of the action of rheumatism. Blennorrhagia is but the occasion which is presented for the display of these phemonena, and it awakens the diathesis. I can cite cases in my own practice where the rheumatic manifestation did not appear until the patients had contracted blennorrhagia. Blennorrhagic iritis, like arthritic accidents of the same origin, is very rare in women. I have convinced myself that the proportion is infinitely more considerable in men. Does syphilis then comport itself differently in the sexes? No, the reason is purely anatomical. In women we do not observe it at the neck of the bladder. In men it is the most remote part of the urethra that blennorrhagia remains longest, and if the neck of the bladder becomes involved, there are more chances for articular and ocular accidents. We observe these at a late period when the discharge is no longer contagious, whilst if we accept the hypothesis of virulence, the accidents should be likely to occur at all times. It is then in latent rheumatism that we observe the ocular accidents of blennorrhagia. A simple catheterism may be the point of departure of a hydrarthrosis of the knee as the action of cold may occasion rheumatic affections of the eye when the neck of the bladder has been attacked. In the cornea we observe a particular form of keratitis, whose relations with rheumatism in certain cases do not seem doubtful. It is the profound interstitial parenchymatous keratitis, scrofulous, vascular, or heredito-syphilitic, which I shall continue to call dyscrasic keratitis.

Is there such a thing as scleritis of a purely arthritic origin? I believe that few of these cases have been observed. Anterior sclerochoroidites and episclerites are much more frequently met with. In acting against this pathological condition we must address ourselves especially to the diathesis. Iodide of potassium or sodium and arsenic, with a season in the country have been successful in some of my cases.

Rheumatic conjunctivitis, accompanied generally by a muco-purulent secretion, may be called an eruptive form; it is a sort of eczema or pityriasis of the conjunctiva, and is tenacious and very subject to relapses. Into this class those forms of conjunctivitis, which are produced by instillations of atropia or eserine should be placed. I do not doubt that the great susceptibility of certain patients to these medicaments, and the easy production of the eruptions of blepharo-conjunctivites in them, is owing, in a great measure, to their general condition—to an arthritic predisposition. Another form is the grave, purulent and destructive conjunctivitis, which, appearing in the course of, or after the accidents of rheumatism, and outside of all contagion, should be attributed to the arthritic diathesis. There remain the ocular paralyses of rheumatic origin. The action of cold is currently supposed to produce them, but I doubt if rheumatism has a very direct action on paralyses of the eye muscles.

From this study of the different manifestations of rheumatism or arthritis upon the organ of vision, the important fact should be retained: that it is always difficult to refer to their veritable cause the lesions that we observe. When, in particular, it is a question of rheumatism or syphilis, an error in the interpretation of the facts would be very prejudicial. We should apply ourselves to the perfect recognition of the lesions of ocular rheumatism, and, in the therapeutical portion, should not forget to combat energetically the diathesis.—*L' Union Medicale.*

ELECTRICITY IN HÆMORRHAGE INTO THE EYEBALL.[1]

BY F. W. FRANKHAUSER, M.D.

Visiting Physician and Pathologist to Reading Hospital, Reading, Pa.

The progress in the use of electricity in therapeutics has been marvelous in the last few years. Some of the uses and effects of electricity are clearly established. There are still many opportunities open for investigation and observation.

The use of electricity in the treatment of eye diseases, especially in the treatment of opacities in the vitreous, presents a large field for investigation.

The electrical current has been employed with much success in clearing up opacities of the vitreous, and theoretical considerations as well as experience sanction its employment.[2]

Girard Lenow states as a result of his investigation in this matter that the electrical current is the most effectual and also the most rapid remedy in the treatment of opacities of the vitreous. Opacities in the vitreous may be caused by diseases of the chorioid or retina, but very often they are caused by external injury, giving rise to a hæmorrhage into the anterior or posterior chambers on into both, the blood entering from without.

The quantity of the hæmorrhage may be only small, not interfering very much with the vision. It may be profuse enough to fill both chambers with blood, and with the ophthalmoscope you may find only a few small flocculi or striæ, or you may find only a dark surface, and not even be able to detect any reddened appearance.

---

[1] Read by the title before State Medical Society of Pennsylvania.

[2] Bigelow's International System of Electricity, p. 12.

This condition is generally found when the hæmorrhage occurs from without, by punctured wounds either through the cornea or through the sclerotic coat of the eyeball. Between those extremes all kinds may be present.

Prognosis.—As to results of hæmorrhage into the eyeball when it occurs from diseases of the retina or chorioid, it is governed by those diseases, or when into the anterior chamber from wounds through the cornea, the prognosis is in a measure favorable, as Leber has reported a few cases of recovery.[3]

Liebreich[4] has reported a case in a woman of forty-five years of age, who after suppression of her menses had a hæmorrhage into the eye completely shutting out the light, which in the course of time was completely absorbed and her vision fully restored. Hæmorrhages into the vitreous from the chorioid or retina are often absorbed, and the vision restored in part or completely.

But where the hæmorrhage into the vitreous is caused from external violence or from wounds in the sclerotic, the prognosis is very unfavorable. If in the anterior chamber it falls to the bottom and is absorbed.

Treatment.—Iodide of potassium, mercury, jaborandi, leeches, cupping, blisters. If due to diseased conditions of the background of the eye, if possible restore that. Galvanism so far, I think, gives the best results. As to the direction of the current, as to which pole should be placed over the affected eye, as to the quantity and length of time of a séance, the frequency of application, there is still some doubt. Some have used the positive, others the negative, some both; some from three to ten cells; others are now using a milliamperemeter, and thus are able to tell the strength they are using. Some have used faradism with some improvement. Some writers say in hæmorrhagic retinitis the galvanic current may be employed with the reasonable expectations of clearing up the hæmorrhage and of preventing its recurrance. There are a few cases on record where the hæmorrhage has been absorbed and the vision nearly or quite restored. There are also many cases where the internal as well as local treatment has not benefited the patient, with no absorption of the clot, and the vision lost.

---

[3] Ibid.

[4] Graefe und Saemisch, vol. iv, p. 533.

Galvanism has, I think, given the best and promises more results than any other plan of treatment. Whether the constant current acts by the chemical decomposition of the blood in the chamber, or as a stimulant to whatever absorbents may be present, is as yet unsettled.

My plan of using the constant current has been to apply the glass eye bath filled with warm water over the affected eye, so the patient could wink and thus get the water under the lids to the conjunctiva, to which was attached the negative pole of the battery; the positive was applied by a sponge electrode to the cervical region of the spine or the temporal region.

A current of from one to five milliamperes was then passed through for from five to ten minutes at a sitting. The sittings were two or three a week. My cases are too few to make a positive statement, but enough to show, as it were, in what direction the wind blows, or as to what may be accomplished in some cases. I have only two cases to report with my results, or only two upon which the galvanic current was used, in the removal of the results of hæmorrhage.

CASE I.—William H., aged 28 years, machinist by occupation, but, owing to ill health, was doing outdoor work, and was foreman of the construction of a sewer. In September, 1892, while filling his pipe with tobacco and lighting it, after a few puffs of smoke there was an explosion. Likely it was a cap containing the fulminate of mercury, used for igniting dynamite, which he possibly had in his pocket; as he carried his tobacco loose in his pocket, it could easily happen. After the explosion Mr. H. found he had several wounds in his face, and very soon noticed he was blind in his left eye. He was sent to me by his physician a few days after the accident. His left eye was cut through the upper lid about the middle, between the inner and outer canthus, an incision posterior to the corneo-sclerotic junction, of three-eighths of an inch in length, followed by extensive hæmorrhage from the wound into the posterior chamber.

The eye, so far as external appearance was concerned, was normal. The pupil was very sluggish in response to light. Tension slightly increased.

With a strong light reflected into his eye, not a glimmer of light could be seen by him. The ophthalmoscope revealed only a dark surface. The anterior chamber normal in depth and free from hæmorrhage. After treating him for over four months with potassium iodide, jaborandi, mercury, blisters and general tonics, without any result—after getting advice from some of the best men in the country, who told me the case was evidently hopeless—I proposed the treatment with galvanism as possibly a chance. After using it three times a week for two weeks he thought the cloud was getting thinner. After four weeks of treatment he could perceive light from darkness, and soon thereafter a small part of the red reflex from the retina could be detected from the inner part of the eye with the ophthalmoscope. At the end of two months he could see light, and the spot of reflex from the retina was increasing.

His internal treatment was continued as before. At six months the retina could be seen dimly all over the posterior part of the eye; the fibers or striæ well marked, with vision improving so as soon to be able to recognize small objects; counts fingers when in close proximity. In a year's time his vision was $^{10}/_{\text{xx}}$—, with the striæ still present. While he does not have working vision, he has still useful vision left with the injured eye.

CASE II.—H. S., aged 42 years. Hæmorrhagic retinitis, possibly caused by diabetes.

In June, 1890, had the first attack of hæmorrhage, following some exertion. A few moments following he noticed he could not perceive light with one eye. The ophthalmoscope revealed a very faint reflex, but under general treatment it was partly absorbed in three months. Just at this time he had an attack in the other eye, which was almost as bad as the first. The second eye cleared up fairly well, vision improved in both eyes, but the hæmorrhages recurred in both eyes during the year. As one eye would improve, the other would get worse. After a year's treatment, directed to the diabetes and the general health, I gave him galvanism once a week to both eyes. In a short time both eyes had cleared to vision $^{15}/_{xx}$, when, in a few months, another hæmorrhage occurred in the first eye, again completely shutting out all light. The galvanic current was continued only once a week, as he lived quite a distance from the city. In two months the vision had markedly improved, and has contined to hold at least its own. There has been no hæmorrhage now in either eye for over a year. His vision, $^{20}/_{xxx}$. Earlier the slightest exertion would bring on a hæmorrhage; now he can do light work on the farm; and, as there has been no recurrence of the hæmorrhage, with his vision possibly still improving, there has been marked improvement in the condition of the blood-vessels, as well as in the absorption of the hæmorrhage.

Galvanism, then, in these cases has at least been quite an addition in their treatment, and much of the benefit is due to its use.

THE AMERICAN JOURNAL OF

OPHTHALMOLOGY.

VOL. XI. DECEMBER, 1894. No. 12

TRANSLATION.

ON PENETRATING WOUNDS OF THE EYE DUE TO PIECES OF COPPER, AND THEIR TREATMENT.

BY PROF. DR. TH. LEBER, HEIDELBERG.

Penetrating wounds of the eye due to pieces of copper are of a special kind. This metal can canse purulent inflammations by its chemical action alone, so that without the help of microbes hypopyon and purulent infiltrations of the vitreous body may result. Moreover, it is especially noxious to the retina and produces detachment or atrophic degeneration. In consequence of this dangerous character of these foreign bodies it must be our principal aim in the treatment to extract them promptly.

When a piece of copper lies in the anterior chamber upon the iris or the crystalline lens, its extraction is, generally, not very difficult. Then the inflammation disappears and the eye is saved, at least if there are no other complications. If the inflammation, which is exceptional, should continue after the extraction of the foreign body, this must be considered as due to microbic action.

Since nearly all these foreign bodies are pieces of caps, we must suppose, that the adherent infectious germs are usually either killed by the heat of the explosion, or arrested in their development by the chemical action of the copper. We meet with the greatest difficulty when the foreign body is situated in the posterior part of the eye. In recent cases, when there is but little or no inflammation, when we can see the foreign body or at least guess its position with some certainty, there is no doubt that we must attempt its extraction at once, unless it should be a very small piece.

However, when it is hidden by blood, by a cataract, or by purulent infiltration in the vitreous body, the eye is, generally considered as lost and condemned to enucleation for fear of sympathetic ophthalmia.

For several years I have used a different method; I attempt extraction, even, when the chances are very uncertain, and in spite of a beginning infiltration of the vitreous body, whenever I can suppose, that the infiltration is of a chemical origin only.

I have briefly outlined my ideas on this subject a few years ago in my book on inflammation, and I desire now to give a more detailed account of my experiences since gained.

At first I shall respond to an objection which I forsee. The wisdom of trying to preserve an eye attacked by purulent inflammation of the vitreous body may be doubted, especially, when it contains a foreign body which under the circumstances can not be removed except by a dangerous operation. Will the successful extraction be of really benefit to the patient? Will not the inflammation or the danger of sympathetic ophthalmia persist or be even aggravated, so that sooner or later we will be forced to enucleate the eyeball?

Experience alone can give a definitive answer and I believe that mine is sufficient to give it in the negative sense. Before, however, speaking of facts, I desire to prove that the danger of sympathetic ophthalmia is not a principal objection.

If it is true, that sympathetic ophthalmia is due to the immigration of microbes, then there can be no such danger when the lesion is not complicated by microbes. An inflammation due to a chemical action will be limited to the diseased eye, because the infinitesimal quantities of metal dissolved in the fluids are absorbed before reaching the fellow-eye.

The essential thing in every particular case would, therefore, be, to know whether the inflammation is caused by the combined action of microbes and metal, or by the metal alone. I have already alluded to this fact, and it is proven by clinical observations as well as by the histological researches of Dr. Kostenitsch, that lesions by copper are, in the majority of the cases, aseptic. Consequently, if the symptoms are such, as we usually meet with, if the inflammation is not intense, and if the purulent infiltration of the vitreous body remains circumscript, the probability that the lesion is aseptic, is very great. It is true, that these spmptoms are not absolutely convincing and we must, therefore, try to gain direct proof by examining the exudation and the foreign body after their removal from the eyeball by means of cultures and with the microscope. With very few exceptions, the results of my examinations have been negative. A further proof is furnished by the prompt healing of the wound and the disappearance of the inflammation.

Whenever microbes were found or when in spite of a negative result of the cultures the inflammation did not disappear in the usual time, the eye was removed.

Out of 46 cases of lesions due to the penetration of pieces of copper or brass into the eye, observed during twenty-three years, 6 concerned the anterior chamber and iris, 40 the posterior part of the eyeball, but 38 only were treated. In 9 of these 38 I at once proceeded to enucleation or exenteration. The removal of the foreign body was attempted in 25 cases and in the remaining 4 I only made a preparatory iridectomy or a cataract operation.

Of the 25 cases in which the extraction was attempted, 18 were successful (72%), 7 were unsuccessful (28%); to this number we must add 6 successful extractions from the anterior chamber, so that in 24 out of 31 cases the foreign body was removed. In 2 of the 18 cases in which the foreign body was removed from the posterior part of the eyeball, I have enucleated finally and in a third case I have advised enucleation.

Among the remaining 15 cases there are 7 in which simply the shape of the eye was preserved, in 8 a certain amount of vision was saved which varied from counting fingers at one meter to one-sixth of normal vision. Several times this vision was lost gradually in the following years, but without inflammation or atrophy of the globe.

I shall now make a few more detailed remarks on the different kinds of cases.

In cases of septic infection, recognized by the beginning of a purulent panophthalmitis, a conservative treatment was of course, out of question. All of the other primary enucleations were made in aseptic lesions, when it was impossible to ascertain the position of the foreign body, or when the accident had occurred a long time before and tension and light perception were diminished to such a degree, that it was clear, that a total detachment of the retina had taken place.

The best cases for the extraction are the recent ones in which there is little or no inflammation, no hæmorrhage, no injury to the lens, in which the shining metal can be seen floating in the vitreous body or attached to the retina. With the most favorable circumstances, however, we are not at all sure of success, especially since here a magnet is of no use.

In three cases of this kind I have succeeded in extracting the foreign body through a meridional section in the sclerotic, either by enlarging the original wound, or by making a new wound corresponding to the actual position of the foreign body. As in all other cases, this wound healed normally by means of antiseptics. In one of these three cases, in which the operation had been very difficult, vision fell to counting fingers close to the eye; in the second case, fingers were counted at twenty feet; in the third case, in which an extraordinarily large foreign body was extracted without any difficulty, the eye had been too badly damaged by the injury to allow of more than perception of light.

I may mention here another case of recent injury in which the foreign body was hidden by a hæmorrhage. The magnet was applied in vain, since the injury was not, as the patient thought, due to iron, but to copper. The error was only discovered four weeks later. The wound had already been healed, when a small protusion of the size of a pin-head showed in the scar, and through a small incision the foreign body came out easily.

In recent cases with dimness of the lens the position of the foreign body can be recognized with difficulty only, or not at all, and we can only guess it, particularly by means of the limitation of the field of vision, by the corresponding position of the wound in the cornea or sclerotic, in the lens and iris. This, however, may deceive us, for the foreign body may have fallen into the vitreous body.

Even, when the lens is intact, the foreign body is usually hidden after two weeks by a purulent infiltration of the vitreous body which surrounds it. As an exception, the dimness develops more slowly; I saw in one case after six months a small piece of copper in the vitreous body veiled only by a slight dimness.

The purulent infiltration ordinarily does not spread beyond the neighborhood of the foreign substance, where it is most intense. Even, when the copper itself is no longer visible, we may, therefore, judge what its position is by the direction in which the yellow reflex from the background is most intense. In partial opacity of the lens this infiltration may, even, serve as a guide when a single small foreign body should be totally hidden.

Even, when we have to overcome such difficulties, the extraction of a foreign body may be successful in half of the cases. Under all circumstances, it should be attempted, whenever there is some vision or at least satisfactory perception of light.

The following observations show that useful vision may yet be given, when purulent infiltration of the vitreous body had already begun to develop.

CASE I.—Lesion by a cap two weeks previously, in a girl of 10 years. Small wound of the sclerotic near the inner-upper margin of the cornea. Yellow reflex from the vitreous body hiding the foreign body. Some hypopyon. Counts fingers at 6 meters. Extraction of the foreign body by means of a triangular flap at the point of entrance. Conjunctival suture. Cultures from the exudation sterile with one exception. Rapid healing with gradual absorption of the opacity of the vitreous body. Vision, four weeks later, $=\,^{6}/_{\text{xxxvi}}$, no detachment of the the retina. Ten months later the patient writes that she can see everything with the injured eye.

CASE II.—In a similar case the extraction was made twenty-six days after the injury, by means of a meridional section through the sclerotic. The cultures remained sterile. Sixteen days later the infiltration of the vitreous body had greatly diminished, vision was somewhat better than before the operation; she counted fingers at 20 feet. Three years later vision was almost lost by a cataract, but could have been restored by an operation.

In the three remaining cases of this kind the perception of light had already been reduced at the time of the operation to such an extent, that the form of the eyeball only could be preserved.

There remain three more cases of secondary extractions complicated with traumatic cataract. If, in these cases, the foreign body has pierced the eye in an oblique direction, it may with great probability be found on the inner surface of the ciliary body, or behind the lens. Under these circumstances I have made an iridectomy in order ro remove as much of the cataract as possible; then I have tried to extract a little of the infiltration tissue around the foreign body in order to make it visible. When I do not succeed, I make one or two meridional incisions through the ciliary body, beginning at the extremities of the iridectomy and perpendicular to these. In this way a large flap is formed, which can be turned back and allows us to see the anterior portion of the vitreous body. If the flap is in the right place, the infiltration tissue around the foreign body can be seen and cut out.

In a patient who had previously undergone an operation for traumatic cataract with iridectomy and where the foreign body had not been found, I extracted it nine days later by means of a flap in the ciliary region. This eye not only healed without shrinking, on the contrary after another six months a second iridectomy restored vision to such a degree that the patient could count fingers at 18 feet. Unfortunately this vision was lost again later on by a detachment of the retina which could be seen with the ophthalmoscope. The effect might, perhaps, have been lasting, if I had added the ciliary incision to the first operation.

In two other cases with traumatic cataract the foreign body was extracted from the vitreous body through the incision made for the cataract extraction. In one, operated on two weeks after the accident had occurred, the visual result was pretty good and had not deteriorated seven years later. In the other, operated on ten days later, fingers were counted at 15 feet; four years later vision was reduced to counting of fingers close to the eye on account of a secondary cataract, which, however, gave good chances for a further operation.

Another proof of the innocuousness of the ciliary section is furnished by a case of recent injury with cataract in which the foreign body was not yet surrounded by exudation of purulent matter, as in the case just related.

This operation was made two days after the accident and four months later an iridectomy was added, by which one-tenth of vision was regained, the general condition of the eye being very satisfactory.

In all other similar cases there was no longer any question of saving vision. However, even then, although the operation would have been possible at an earlier date, the inflammation generally disappeared very rapidly and was followed by a very moderate shrinkage, which in all likelihood, should have developed without the operation.

In the two cases, previously mentioned, in which it was judged expedient to finally practice enucleation, the anatomical examination gave me the impression that it had not been necessary.

In fact, I have never seen sympathetic ophthalmia or even sympathetic irritation attack the fellow eye.

In cases of opacity of the media of the eyeball the non-success was usually due to an error regarding the exact situation of the foreign body, which had either penetrated farther into the eye, or fallen into the vitreous body. The examination of the enucleated eyeball showed regularly why the method of extraction could not succeed. Nevertheless, in 9 cases out of the 17 in which the foreign body was totally hidden, I was fortunate enough, to extract it, so that even these cases are not totally hopeless.

I may, furthermore, speak of a certain kind of lesion, the symptoms of which do not at first differ materially from those of an ordinary traumatic cataract. The inflammation is slight and sometimes for a time disappears altogether. Vision corresponds with the optic condition of the eye. Since the cataract is in the way of seeing the position of the foreign body, I first try to make it disappear by means of discission or extraction. In one case only, after absorption of the cataract following discission, I could indistinctly see a piece of copper in the vitreous body. In four other cases, although a certain degree of sight was restored, the foreign body remained invisible. Consequently, with one exception, extraction was not attempted and the regained vision was generally lost after a short time.

In one of these cases, when dissecting the eye which had been enucleated, I made the astonishing discovery, that it contained no foreign body, but only a slight exudation in the infiltrated zonula. Since I have seen, how copper filings, when put on the iris of the rabbit, are gradually absorbed, I believe that in this case, also, a small foreign body disappeared by absorption. This possibility explained also the following observation: During the extraction of a traumatic cataract the expected foreign body did not come out, yet, three months later I could see a little body floating in the pupil, evidently suspended by an invisible filament. This, when removed, consisted of a thin piece of copper of the size of one-half to one millimetre covered by an organic substance; it was so thin, that when I grasped it with the forceps, it was reduced to powder. Since it would have been unable to perforate the sclerotic in so fragile a condition, it must necessarily have been modified and partially absorbed by the fluids of the eye.

I do not want to go into further details. I hope to have shown, that the conservative treatment of penetrating injuries by copper deserve of the greatest attention. I am convinced that it is wrong to enucleate an eye which encloses a piece of copper, as long as the function of the retina is intact; even in those cases in which vision cannot be restored, I believe it is preferable to attempt to save the eye, since the danger of sympathetic ophthalmia is an exceptional one. This of particular importance for the patients from among the working classes, for, as is but right, they prefer a natural eye, even if blind and disfigured, to the best artificial one, and, moreover, the conservative treatment gives us the satisfaction, at least in a number of cases, to save a small amount of vision in an eye, which formerly we should have considered as absolutely lost. —*Rèvue Gén. d' Ophth.*

SELECTIONS.

DEFECTIVE VISION IN ITS RELATION TO CRIME.[1]

BY FRANK VAN FLEET, M.D.

[1] Read before the New York Academy of Medicine, October 18, 1894.

The subject of crime presents to the student of human nature so many sides that, in its study, he is at a loss to know just which side to attack. It is perhaps natural that each student should begin at the side which, in his judgment, seems the most important. Naturally, the physician begins with the causes, and ends with the cure.

In carefully looking over the ground, we find that we can divide the causes of crime into two groups, namely, the moral and the physical. It is not possible in a paper, on the causes of crime from a medical standpoint, to separate the physical and the moral entirely. They are so dependent on each other; and both so important that we find our thoughts constantly drifting backward and forward between the two.

A comprehensive study of crime and criminals would occupy more time than we have at our disposal to-night, and I have therefore endeavored to limit my remarks to one of the most important physical causes, namely, defective vision.

The proportion of crime and criminals to population is increasing. Writers are not wanting who will tell you that education increases crime. The statement is true; education and enlightenment do not only increase crime but cause it. To make this unqualified assertion, however, is unjust and misleading. These factors do increase crime, but not necessarily in the possessors themselves. The increase is rather among those who have to compete with the educated. So it might be, and is said, that it is the very lack of education that is the cause. But neither education nor the lack of it are in themselves sufficient to cause crime, as I shall show later on.

Crime dates back as far as history extends. Thousands of years before the historical era, long before the days of Moses and the Patriarchs—as long, indeed, as forty thousand years ago—man wandered upon the face of the earth in herds, even as a few years ago the buffalo lived on the Western plains. There were in those days no ties of family; father and son, sister and brother, were no more to each other than so many members of the common flock. Children honored and respected their mothers only so long as the mother was necessary to the offsprings's existence. In those days there were no crimes, because there were no laws. The existence was precarious. Every individual was a law unto himself. The strong triumphed over the weak because might made right. The weak and delicate, if there were any, perished. The law of the survival of the fittest here found its most marked exemplification. Flourishing in the warmth and luxury of the summer, freezing and starving during the long and severe winters, this herd of animals of perfect physical development, lived on. Slowly, on through the centuries, this existence continued, every generation probably advancing beyond the preceding, until, gradually, intellectual man began to expand. With this expansion came thought of comfort and desires for better things; in short, ambition. Now the family began to be a gathering separate from the herd, the migratory habit ceased, places of settlement became permanent, and the former herds populated towns or became fixed settled bodies of individuals, divided into families of father, mother and children.

Each family became a separate and distinct body, but bound together for mutual protection. The strong still endeavored to triumph over the weak, and the weak were probably more numerous than before; the new feeling which had grown up—

family love—made the stronger members protect the weaker. But outside the family were others who would still look with longing eyes, and covet a neighbor's wife or servant, house or land,—feelings and longings which, in their former condition, were gratified by simply taking possession.

Now the integrity of the whole demanded that the weak should be protected, and laws were made sufficient unto the time. Here, then, was the first step in the establishment of crime. Acts which now came under the bane of society, were looked on with indifference by the herd; but the enactment of law made these acts crimes. Increasing intellectual development has, of course, added to the laws, and with the increase of laws so has crime kept place. Not, however, that there are any more acts committed against society, but the moral tone of society is so far elevated, one generation above the other, that acts condoned in the days of thefather become crimes during the generation of the son. As education and enlightenment walk hand in hand, it is not to be wondered at that crime should increase. Neither is the increase a matter for regret; but rather a healthy sign of the times.

But, as in ages when there were no laws, and down through the centuries that intervene until our time, there have always been people who would resort to measures not to be commended, to obtain the means of existence, or to gratify desires. On this point much has been said. Reasons have been given, diverse in many particulars, why we should have criminal classes.

The physical reasons for crime can generally, however, be brought into a small group, and considered under two heads, viz.: heredity and environment. The moral side, as I have already said, is of great importance, and admits of much argument. While we will not enter into it, we may say that the strong point of most writers on the social question, is the statement that the misery and distress found in this world is due to the ignorance, neglect or contempt of the natural rights of man.

The influence of heredity in the production of crime is more than doubtful. So great is it considered by some, however, that the enactment of laws to prevent the propagation of children by criminals has been advocated. It would by very difficult to prove that man bequeathed to his offspring tendencies, either criminal or otherwise, as a natural heritage. The weight of evidence is, to my mind, against the truth of such a claim. We have no less an authority, than Supt. Byrnes, of the New York Police Department, as published in the *North American Review* for July, 1894, as follows: "A good deal is said nowadays about the causes of crime, and crime as an hereditary disease. I have observed that most of the crime committed in New York is due chiefly to two causes—drink and environment." * * * "I have seen men so corrupt that it seemed to me as if a tendency to commit crime must be in their blood; but on the whole, I do not put much faith in the theory that criminals are born with an irresistible tendency to evil-doing. I know that children of criminals are very apt to become criminals themselves," and he then goes on to show that, as their homes are the resorts of criminals, the children very naturally fall into vicious ways.

It is supposed that certain physical attributes are handed down from one generation to another. Features of the father are reproduced in the son. Physical characteristics are said to distinguish races. The Ethnologist claims to be able to tell by the shape of a skull or a jaw-bone the race to which its owner belonged. In families not only shapes of heads and features, but color of hair, eyes, and general build, are said to distinguish one family from another. If we believe in the theory of the separate origin of races, it is easily understood why differences should exist in their anatomical peculiarities, but even here we find diversity of opinions. As Prof. M. J. Weber said as long ago as 1830, "There is no proper mark of a definite race-form of the cranium, so firmly attached, that it may not be found in some other race." (See "Crania Brittanica.")

The resemblance between members of the same family will depend on two things, namely—First, the imagination of the observer; and, second, on the fact. Great differences of opinion will exist with different observers. One will declare two brothers look alike, notwithstanding one is short and the other tall; one is dark and the other light; one stout and the other slim; and, in fact, their appearances may be entirely opposite. On the other hand, persons between whom there exists no relationship whatsoever, except that they belong to the same race, frequently bear to each other the most striking resemblance. This resemblance, which is often so marked as to make it difficult to distinguish one from the other, may be due to the effect the mental working has on the facial expression. As certain thoughts will be expressed by certain movements of the face, as grief, joy, recognition, etc., which movements are due to involuntary or reflex muscular actions, so people who are accustomed to think in certain lines, after a while become to look alike. Physicians resemble each other; lawyers, cobblers, tailors, and, in fact, nearly every class of professional men and artisans, have certain actions and expressions, due to their habits and ways of thinking, that distinguish them one from the other.

What is more likely, than that this resemblance should be greater in families, between brothers and sisters, than among strangers? What could be more natural than that a son should resemble his father in feature, gesture and general action, for this reason alone? A very excellent paper on this subject, well worth reading, will be found in the *Popular Science Monthly*, Vol. xlv, No. 3, the title of which is "On Acquired Facial Expression," by Louis Robinson, M.D.

So it may be said that physical resemblance between members of the same family, is largely imaginary, and where it does really exist, is due to training and not to heredity.

We must, of course, admit that heredity does play an important part in the development of certain of the lower animals. But it does not seem to me that there is any analogy between them and man in this particular. Certain physical characteristics are made to appear in certain breeds of animals, generation after generation; but it is only with the greatest difficulty that it is kept up, necessitating the selection of animals for propagating, and even with the greatest care, the breeds tend to return to their original conditions. It may be that, by proper selection, we might be able to apply these same rules to man, but I do not think it at all probable that such a procedure will be attended with any degree of success. Certain it is, that where certain customs have been exercised, both as religious rites and otherwise, as, for example, among the Arabian, Jewish, and other races, where circumcision has been practiced since time out of memory, the effect has not been different on the offspring than in races where it has not been done. The Jewish race, especially, where circumcision is practiced as a religious rite in the early days of infancy, and where selection is made in mating, at least to a certain extent, would seem to offer the conditions necessary, yet we find these children not different at birth from other children.

If this is true of physical attributes, how much more unlikely that mental attributes should be inherited!

Physical characteristics exist at birth; but the mind is entirely the result of development, and it develops absolutely as it is trained. If we expect criminals to beget criminals, so, on the other hand, we should expect highly-educated and intellectual people to transmit to their offsprings greater intellectual qualities. We know that this, as a rule, is not the case. Nobility of character and intellectual qualities do not, necessarily, descend from father to son as a natural heritage. The only influence such a parentage can have is the advantage of training and development, and the force of example during the developing period of the child's life. The same may be said of the criminal. The only direct result of criminal parentage is the criminal training during childhood. The individual who neglects the moral training of his child, expecting of his offspring great results because of his own greatness and goodness, will find, often too late, his error. Proverbs xxii, 6, says: "Train up the lad in the way he should go, and when he is old he will not depart from it."

"Heredity," in this connection is, therefore, a misnomer. In its place should be put the word "environment," which includes everything else. Impressions made in childhood by force of example, teaching and general surroundings, are the factors which determine, as a rule, the course of the adult. In the diary of a friend, lately deceased, was found this entry: "Every word spoken, and every gasture made in the presence of a child, has its influence in the formation of that child's life." Gay has said: "The hand that rocks the cradle rules the world." The worship of wealth and position, the teaching that might makes right, all these become to the growing mind influences which determine its future course.

But environment, beside embracing parentage, training, and all external surrounding; includes also factors within the individval himself which affect the teachings, whether they be for good or evil.

The blind child, for example, would be entirely unaffected by its surroundings if it had no other means of communication than vision. Environment, therefore, must include the avenues through which education is acquired. What are these avenues?

At birth the human being is simply a creature of physical development; intellectual development comes later. The child of the most refined parents can be made a criminal, and so the child of the most deproved parents, if taken immediately at its birth; can be developed into the highest type of human being. I have no doubt that, if a child were allowed to grow to manhood without mental training of any kind, he would develop into just such an animal as our earliest ancestors are said to have been.

Education begins in infancy, through our mental appreciation of objects around us, the existence of which is demonstrated to us through the medium of the eye. Other avenues contribute to the result, as the other so-called special senses. In the absence of vision, as in children born blind, or who lose their sight through accident or disease, these avenues can be made to fulfil the natural function of the eye. Instances are not wanting where people who were blind have become highly educated through the sense of touch. Here one special sense, in the absence of another, is made abnormally sensitive. This, however, is unusual.

Education in the earliest days of life is purely imitative. We speak the language of our parents because that is the one we most often hear. A child, born of English parents, transferred at an early period of life to a German surroundings, would become, in speech, action and thought, German. The characteristics of his forefathers would be entirely foreign to him. Not only this, but his physical peculiarities, if nations can be said to have any physical peculiarities, would be German. So a child born of refined parents, put under the influence of less refined people, would develop on a par with his surroundings. If, perchance, in his manhood, he should rise above their level, it would be purely accidental.

One takes pride in the traditions of his country simply because these traditions have been dinned into his ears since his earliest recollection. The native-born American, educated from infancy on foreign soil, would fail to be fired with enthusiasm at hearing for the first time the martial airs of his native land. The love of country, like the love of home, is purely the result of education. G. H. Lewes, in his life of Goethe, says: "It would be nearer the mark to say that man is the architect of circumstances." But this can be only partly true, and a very small part at that. The circumstances over which man has control are very few, while the forces over which he has no control whatsoever, encompass him on every side. Verily, man is the creature of circumstances. Surrounded only by moral teachings, seeing only beautiful objects, subject to nothing which can mar the harmony and peace of life, it is impossible that moral crimes should exist.

Unfortunately, we are so situated that this ideal life cannot be led. The child of the most refined parents has presented to him objects of the grossest immorality. He is forced to compete with vice in every form, so that the influence of good teaching is counteracted by the influence of bad. These influences which are bad may come from external forces, or from defects which are in himself. I shall not consider here the influences which may come from physical defects generally, but will confine myself to influences which come from defective vision.

The young infant takes very little note of retinal influences. Soon, however, the child begins to notice objects around him, and, depending on the perfection with which these objects are portrayed on his retina, does he sluggishly or rapidly appreciate what he sees. The eye is simply a camera which pictures surroundings perfectly or imperfectly in accordance with the perfect or imperfect condition of the organ itself. Astigmatism, for example, when it exists, is supposed to be congenital. The axis may be any direction from vertical to horizontal. When it is oblique, and the axes of the two eyes parallel, objects viewed must be tilted. That such a condition occurs is shown be the fact that when, in after years, the refraction is corrected, the correcting glass will cause objects to tilt in the opposite direction, for the time being. Here, then, on the threshold of life, occurs an element of danger. Some mental effort, involuntary no doubt, is necessary to enable the possessor of such a condition to see the world as others see it.

Excessive amounts of hypermetropia call for increased muscular efforts beyond the normal, to accurately portray on the fundus of the eye objects viewed. Muscular effort, accommodation as it is called, is necessary for any one to see clearly and distinctly. Vision is never in any sense passive. All of our special senses, when employed to their fullest extent, require concentration of force. We hear sounds vaguely; suddenly a familiar tone strikes our ear; we stop. We concentrate all our energies in the act of listening. The same with smell and touch. We feel in our hands a substance,—a fabric, perhaps. We feel it carefully, shutting out everthing else; we concentrate all our energies on the sense of touch. So with vision. Our eyes take in many things as we aimlessly gaze about us. But, when we wish to see distinctly, we ignore everything else for the object looked at. This may be called that indefinable force, mental concentration, but it implies involuntary muscular action, as well. The individual with imperfect organs of vision labors, therefore, under a disadvantage, and if he sees as well as others it must be with greater muscular effort. He uses up force in trying to get perfect images that the person with normal eyes need not expend for coming to logical conclusions.

Knowledge is acquired through impressions made on the organs of special sense. It is through these channels that we obtain absolute knowledge. Inferences can never be designated as facts. Facts are what we see and hear. The ordinary witness in a court of law, except it be in expert testimony, would never be allowed to give opinions; only what he absolutely knows, from what he actually sees and hears, is admitted in evidence. How essential it is, therefore, that he should have these organs in a condition capable of seeing and hearing correctly. Great interests,—a life, perhaps,—may depend on their perfection. Even judges and experts will vary in their thoughts and opinions, depending on the precision with which they grasp facts as they are seen or heard. Opinion is merely the expression of thought, and thought the expression of sight and hearing. There are very few people in this world who will doubt what they actually see; hence the saying: "To see is to believe."

The mechanism of vision is simple in so far as the eye itself is concerned. Rays of light emanating from luminous bodies pass through the air, penetrate the eye, and on the retina is depicted an inverted image of the object viewed. If it were here appreciated, the world and all thereon would seem inverted; but by some means, to physiologists unknown this picture is taken up by the optic nerve, carried to the brain, and there seen in its upright position. If the eye is imperfect the image must be depicted on the retina in a distorted condition. If there existed in the eye itself no compensating power, this distorted impression would be carried to the brain in a condition unlike the original. It is evident that the possessor of such an eye would have, at best, a very imperfect idea of things as they actually exist.

Fortunately for mankind, the eye is provided with a compensating apparatus in the muscle of accommodation. A common example is this: A person enters a room; on a table is an object which to the observer seems an image of some horrible things. So hideous is it that it inspires a feeling of fright. He fastens his eyes on it, and gradually its irregular outlines straighten, and the fear-inspiring object becomes a masterpiece of most beautiful and exquisite statuary. The feeling of fear becomes one of admiration. But the real appreciation in this individual requires time. If a series of objects pass rapidly before his eyes, it is evident that, in the time required to see all distinctly, much must be lost. If it should so happen that the error in such eyes as these is greater than the power of compensation, a correct appreciation of objects viewed would be impossible. It is difficult for one not so situated to fully appreciate the condition of mind engendered by such a defect. Yet as much is expected of this being as of his more fortunate fellow.

The result of such a condition may be varied. Some may be content to accept the fact as it is. They would be designated as stupid. Some, by persistant exercise of will, may develop their accommodative powers sufficiently to overcome the trouble, but it will be at the expense of some other portion of the human machine. Some, battling against these odds, may not be so happily constituted and fail.

The first accepts defeat and says no more about it. The second achieves success at the expence of general health. He is irritable, dyspeptic; he is said to have an excess of bile, and so on. The third, which will constitute a large proportion of people so affected, will writhe under defeat. They will be the disappointed people. Unwilling to accept places in the lower walks of life, they try to compete with their more favored brothers. But they are handicapped, and failing in the race because of the unequal struggle, they seek to gain by foul means what they cannot get by fair. And so, from childhood up, the world to them is never quite right. They are taught to think white when they see black. What they are told is straight, to them seems crooked. How can an individual so weighted be expected to be like other men? To him things are never as they seem. He thinks the whole world is wrong. He becomes a criminal from necessity.

Here, then, it seems to me, is the explanation of the statement that education increases crime. Education gives to its possessor an advantage over his less favored brother. It gives to a community a refinement which causes it to include in the category of crime, actions which would be looked on less harshly were the standard lower. It makes also the competition greater, and, as the race is always to the swift, the man who is weighted with physical disabilities must, unless he is capable of unusual effort, bring up in the rear. Nothing is so disheartening as continued failure and defeat. To borrow an expression fram one of our evening papers, "if nothing succeeds like success, nothing fails like failure."

Through the kindness of my friend, Dr. Van Santvoord, and the Board of Directors of the Society for the Reformation of Juvenile Delinquents, I have been enabled to make some observations in the institution they so ably manage. I desire to express to them my thanks The reformatory is situated at Randall's Island, and receives children from certain parts of the State who are committed by magistrates for offenses, criminal and otherwise. I expected, of course, to find many cases of defective vision among so many children, taken, as they are, from the lower classes. The ages range from eight to nineteen years; the average of those examined being about fourteen years. The authorities were very anxious to have the matter inquired into, and sent me first those who complained of their eyes, or who were thought, by the teachers, to have defective vision. Any one who has had dealings with children in institutions will know that, to ask the children themselves who among them had trouble of this nature, would be to elicit an affirmative answer from nearly every one of them. But, a careful canvass of the school by Mr. C. W. Manchester, the principal, brought forth seventy-five children who either could not see well, or else complained of their eyes paining them. Of this number, 51 or 68% were found to have defective vision. The test of vision was the ability to read the line of the test-card which, at a distance of twenty feet, forms with the eye an angle of 5′. I think that this test is low; for, in an experience extending over a period of thirteen years, in the New York Eye and Ear Infirmary and the Manhattan Eye and Ear Hospital, where together, perhaps, thirty thousand or more patients are treated yearly, I have been forced to the conclusion that normal acuity of vision is greater than $^{20}/_{xx}$, is not less, in fact, than $^{20}/_{xv}$, and it is not unusual to have nearly, or quite, $^{20}/_{x}$. I think, therefore, that, while normal vision may range between $^{20}/_{xx}$ and $^{20}/_{x}$, a vision of $^{20}/_{xxx}$ may safely be said to be defective. My work was interrupted because of my own lack of time, but I was enabled to make an examination of some twenty-six more children who had never complained in any way of their eyes, and who were not supposed to have any trouble of this nature.

The result was certainly surprising, for of these twenty-six, fifteen or 57.5% were found to have defective vision. I see no reason to doubt that this would have been the result if the entire institution were gone over carefully, and every child examined. There was no discrimination in the selection of these twenty-six children; they were taken one after another as they happened to come. Of the total number—101—examined, 65; or 64%, had defective vision. The small number examined is, of course, not sufficient to draw conclusions from, but it is, at least, suggestive. I do not know how this would correspond with the conditions existing generally, in public schools, and in institutions not reformatory, but I do know, that many of the defects existing could be easily remedied if oculists were attached to all institutions where children are educated. The Board of Directors of the House of Refuge have, I am glad to say, since appointed a capable oculist, and I am sure good results will come from it.

We have now considered the origin of crime in the beginning of history, and the causes that perpetuate its existence, and govern its increase. We have endeavored to confine ourself, as nearly as possible, to the physical side. The moral side is not less important. "Man's inhumanity to man makes countless thousands mourn;" but if we took up the subject in full, going into details on every side, the discussion would be never-ending. We have considered that heredity, *per se*, plays an insignificant part in the production of crime; that environment predisposes man to good or evil, but that the all-important element is education, and that education may be acquired with ease or difficulty, according as the avenues, through which it is acquired, are perfect or imperfect. We must therefore consider, finally, how the disastrous effects of imperfect vision on man's intelligence can be combated.

Optical defects may be congenital or acquired, permanent or temporary. Many of the permanent defects are congenital, but some are acquired in the early days of life, and are avoidable. We find in Noyes, on "Diseases of the Eye," a statement of over 3,000 cases of blindness made by Magnus, in European institutions, 53% of whom were incurably blind from Ophthalmia Neonatorum. If the number were known, of children with imperfect vision as the result of sore eyes in infancy, the figures would be astonishing.

Sore eyes in infancy, ophthalmia neonatorum, is, I think, absolutely preventable. It is quite the rule to find more or less conjunctivitis in the newly-born infant among the poorer class of people, in the tenement-houses. Recognition has been taken lately, in requiring midwives to call in physicians when the baby's eyes are sore. Within the past year, two midwives at least have been given cause to remember that such a law exists. Not only midwives, but physicians do not give to this matter the attention that its importance demands. It should be the care of the medical attendant, at the birth of every child; to personally direct the washing of its eyes. Absolute cleanliness here prevents many disastrous results. Or if, despite every precaution, severe inflammatory conditions should prevail, it is much better to consult an oculist in the early stages, before irreparable damage is done, than to wait until the cornea has perforated, the iris prolapsed, and the eye is perhaps lost.

With congenital defects early attention will often start the child on the right path; while delay may interfere with the chances of success later on. For example: congenital cataract if operated on early, exposes the retina, and enables it to perform its function as Nature intended it should. The question whether amblyopia results from disuse, is one of many sides, but that defective eyes gradually improve when the defects are corrected, is too common an occurrence to admit of dispute.

The advice of family physicians will often determine the fate of these little patients, and it is therefore well that they should especially interest themselves, and study the possibilities in each case. I call to my mind now a child with congenital cataract in each eye, whose only vision was perception of light. That is, the retina was sensive, so that the distinction between light and dark was perfect. The child was otherwise healthy, and the chances of success from operative procedure were very good. But, physicians are not prophets, and because of our inability to give a positive assurance of perfect success, an operation was refused by the parent. An operation could not have made the condition worse, as perception of light was all that existed, which, for any practical purpose, was useless, while it offered every chance of success. As the result, this child was condemned to years of blindness. Our civilization has not advanced far enough to deny the parent the right to decide its offspring's fate in such a case, but, better would it have been for both mother and child, if some less interested person, as the family physician, could have decided the question. Preventable defects should be prevented, and congenital defects remedied, as far as possible, in the early days or months of infancy. In infancy it is not possible always to detect the defects known as refractive errors, which are by far the most numerous and important; nor, were detection possible, would the treatment be practicable. But, in childhood, that is, after two years of age, not only is detection possible, but easily accomplished, and correction, while sometimes difficult in early childhood, can be, and is, successfully carried out. It is better to correct glaring defects and deformities at the earliest possible. It is at this time that children first begin to squint. Simple correction with glasses now may not only avoid the necessity of an operation later on, but may preserve useful vision in an eye which would, perhaps, become amblyopic. Young children who blink the eyelids, those whose eyes are oversensitive to the light, those who constantly hold objects too near in order to see them clearly, or who show evidence of any condition which is sufficiently noticeable to attract attention, should receive immediate treatment. The fallacy that children outgrow certain conditions is not confined to the laity. But the outgrowing of myopia or of periodic squint, means, in the first instance, the passage from benign to malignant; and in the second from occasional to constant.

The place, par excellence, where the most harm is done, is undoubtedly in the school, and the public school especially, for here is where most of our children, at least in this city, receive their education. I feel that too much cannot be said on this point. The massing of children together, under one system of teaching, without first paying attention to their physical abilities or disabilittes, is wrong. We have done much in this city in the improvement of our school-houses; they are better lighted, better ventilated, and in better hygienic condition generally, than they were. It is safe to say that they will continue to improve, for the people generally recognize the necessity of education. But, notwithstanding the improvements in hygiene, in books, in methods of teaching and all, absolutely nothing is done to see that the avenue through which the knowledge is acquired is normal. I am informed by teachers in schools that it is very common to have children who are unable to see the black-board, even from the front row of seats. Some children lose a large part of their time from headaches due to defective vision, or from perfect vision maintained under difficulties. Not only this, but the nervous irritable condition of many school children, and of teachers, too, for that matter, can be directly traced to defective eyes. The number of children affected in this way, I have no means of knowing, but I think an examination of the eyes of public school children would show most surprising results. How can this evil be overcome? Nothing is simpler. I advocate the examining of the eyes of all children upon entering the schools. We demand that every child shall show evidence of vaccination. A certificate of vaccination is required before the application is even considered. It is equally, and perhaps I might say, even more important, that a certificate of ocular perfection should be required. We cannot cure ocular defects, always; we cannot make a myopic eye shorter, nor can we change the shape of the cornea; but we can correct refractive errors with glasses, and put the possessor of eyes optically imperfect, on an equal footing with his more fortunate fellow. We are met here immediately with an objection. Parents do not want spectacled children, and their objection is reinforced by physicians who, certainly for no other reason than lack of knowledge, do not believe in children wearing glasses.

Not long ago, one of the leading medical journals of this country noticed with regret the growing tendency to put spectacles on children. It is not a thing to be regretted; it is rather a healthy sign of enlightenment and advancement. The growing demands of civilization necessitate one of two things: either the possessor of defective eyes must put on glasses, to make him the equal of his fellow-man, or he must take a back seat. She objections of parents, when forced to consider these two alternatives, will speedily vanish. Of physicians we can only ask that they give the subject careful consideration. Boards of education should have attached to them oculists whose duty it should be to examine, at regular intervals, the eyes of all children in schools. They should report to their superiors and suggest remedies. The question of expense to the community should be of no consideration whatever. The matter should be out of the hands of politicians entirely. The Comptroller of the City of New York may object to appropriations for public school purposes, on the ground of economy, but the question of economy is not considered when he subjects the city to unnecessary expense to gratify his ambition and increase his salary. There is no economy in stinting the Board of Education. It is absolutely certain that the more we spend on public schools, the less we will be obliged to spend on our prisons and alms-houses.

Not only public schools, reformatories, and other public institutions where children are taught, should have the eyes of inmates examined regularly, but private institutions as well. Let parents fully realize, what they already know in a general way, that perfect eyes are absolutely necessary to success in the competition of this life, and the objection to glasses will, as I said before, soon vanish. After school life the condition of the eyes should determine the choice of occupation. Imagine a boy of sixteen years with a myopia of 20 dioptres, addressing letters from morning till night. I have just such a case in view. The father of this subject is a bartender and has perfect eyes. The son is a clerk and has very imperfect eyes. This is one of the inconsistencies of life easily avoided. Better for this lad had he been a laborer or farmer, or at least in some position requiring less use of visual organs. I consider ultimate blindness almost inevitable in his case.

The law, happily, has interfered in some cases of defective perception, for the public good. The examination for color-blindness has deposed many men from positions requiring the use of normal eyes, and has compelled them to seek other means of earning a living. It is not too much to ask the people to enact laws for their still further protection, by enforcing ocular perfection. The existence of myopia should always, I think, determine the occupation, especially where the amount is great and the tendency is toward progressive myopia. In low degress properly fitting glasses may be all that is necessary. They should be insisted on, however, by medical men and employers. Other conditions, as excessive amounts of hypermetropia and astigmatism, should not debar one from choosing almost any occupation, provided the eye is made normal with glasses. In astigmatism even the smallest error should be corrected. Excessive astigmatism, uncorrected, necessitates poor vission. The result of poor vision is that one sees slower than other people. With small errors, however, perfect vision is not only possible but generally attained. The person whose perfect vision is maintained under great strain is apt to be abnormally sensitive. The constant sense of alertness necessary to keep track of everything, a condition which is not necessary to the one without ocular defects,—and so impossible of attainment that it is not attempted in the possessor of marked errors,—begets such a condition of general hyperæsthesia that is often never absent, as to render the person so afflicted irritable, excitable, and of uncertain action generally. Who can wonder that this class of people commit all sorts of acts for which they are not, morally, responsible?

And now, in conclusion, let me sum up in a few words the ideas I have endeavored to convey. It is very probable that the human race has altered very little, if at all, since the beginning. There is nothing but theory, and that very far-fetched, to prove the opposite. At any rated, there has been no change since the earliest time known to history. The surroundings, however, are very different. From beging creatures of purely physical development we have become creatures in whom intellect predominates. Our anatomy has not kept pace with the physiological requirements. Spectacles are not evidence of growing physical weakness, but rather of increased intellectual growth. Our eyes are merely the principal avenues through which intellectual food is acquired. If all individuals were alike, and all eyes imperfect, the conditions would be more nearly equal. It happens that very many eyes are as perfect as it is possible for eyes to be, and they confer on their possessors an immense advantage. Man always takes advantage of his weaker brother, who is obliged to resort to other measures in self-defense; if the measures he employs are legal, well and good; if they are illegal, he becomes a criminal.

Do not misunderstand me. Crime has many causes, many features. Defective vision may not be in itself alone sufficient to make a man a criminal, but its influence is great and deserves careful consideration. — *American Medico-Surgical Bulletin.*

REVIEWS.

ESSENTIALS OF THE DISEASES OF THE EAR. (Saunder's Question-Compends, No. 24). By E. B. GLEASON, S.B., M.D. [Philadelphia: W. B. Saunders, 925 Walnut Street. 1894.

Among the many small compends, this one is decidedly one of the best.

OEUVRES OPHTHALMOLOGIQUE DE THOMAS YOUNG. TRADUITES ET ANNOTÈES PAR M. TSCHERNING. Publication faite aux frais de la fondation Carlsberg. [Kopenhagen: Andr. Fred. Hoest & Son. 1894.

To the student of oyhthalmology no greater pleasure could be afforded than to read this excellent reproduction and translation of the works of Thomas Young, with the learned translator's annotations. Type and illustrations—in short everything—is excellent.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. Edited by C. E. SAJOUS. Vol. V., for 1894. [F. A. Davis, Publisher, New York and Chicago.

These volumes ore now too well known to need any further praise. Suffice it, to state that Volume V has appeared.

DIE AUGENÆRZTLICHEN OPERATIONEN (OPERATIONS ON THE EYE). Von DR. WILHELM CZERMAK. No. 6 and 7. Wien. Carl Gerold's Söhne. 1894.

This fascicle details the operations in the orbit and concerning the muscles of the eye and is as complete and excellent as its predecessors. One more fascicle which is still to appear in 1894 will complete this very useful handbook. ALT.

OBITUARY.

LUDWIG MAUTHNER †.

April 13, 1840 to October 20, 1894.

The following touching remarks by J. Hirschberg, Berlin, are taken from his *Centralblatt:*

This morning's (October 21, 1894), mail brings me a letter, stamped in Vienna on October 19, 1894, between 11 and 12 p.m., and which contains the following card:

October 19, 1894.

My best thanks for your friendly and devining wishes. My nomination as Ordinarius and Chief of the I Eye-Clinic has been published to-day only. Friendly greeting,

Ludwig Mauthner.

I suppose, these were about the last lines of Mauthner's. He wrote them late on Friday night, October 19; during that night, from the 19th to the 20th of October, he suddenly died of apoplexy.

Reality is more tragic than all tragedies. For seventeen years he had with unwavering efforts striven for the one price, which, strange to say, he considered the highest good,—the position as Professor Ordinarius in the Medical Faculty of Vienna; on October 19, his nomination for this place is made public, in the following night he dies, 54 years of age—like the leader of an army after the victorious battle.

Ludwig Mauthner was born at Prag on April 13, 1840.

Talent and intellect were his heirloom from his family, which had several renowned members. He finished his studies in Vienna, where he graduated in 1861, and became very closely allied to the genial E. v. Jaeger, who in those days was, however, unknown and being kept in the background. The friendship between the teacher and his pupil was touching. Although E. von Jaeger was a highly gifted artist, to this day still unsurpassed in his ophthalmoscopic atlas of the year 1869, and equaled by few only as a cataract operator,—this modest man said to me in his own operating room in 1871: "Yes, if you want to see *good* operations, you must go to Mauthner."

Mauthner, on the other hand, never tired to put into the right light what was due to his teacher in regard to ophtholmoscopy, measuring of the refraction by means of the ophthalmoscope, and the more exact examination of the visual acuity, and to defend him against one-sided representatives of other schools.

After one short year of wandering, which brought him to Berlin to Graefe and also to London, Mauthner settled in Vienna and, never left Austria again, except occasionally when called in consultation. In 1869 he was called to Innsbruck as Professor Extraordinarius of Ophthalmology. However, he resigned this position of his own will and returned to his beloved Vienna, satisfied to cultivate his modest field as private docent, which strangely contrasted with his unusual eloquence and teaching qualities.

Unbeknown to him I heard his public lectures in 1881. Three students listened to him; two of which were American physicians, who did not understand the language and one a Russian, who did not understand the subject. Yet, Mauthner, discoursed in a truly artistic, completely scientific manner, in the short space of one hour, the whole theory of the ophthalmometer and the measuring of the optical constants of the living eye, as nobody else on the whole earth could have done it. This I know from my many traveling experiences. Such lectures, of course, were too high for the students, who moreover, have obstacles thrown in their way by the obligatory lectures and the examinations. In private practice, however, he found full recognition and the highest esteem; and in the medical society of Vienna his eloquence always produced an astonished admiration.

His pupils, like Schnabel and Purtscher, loved him with a warm reverential feeling. He did not visit congresses. I think he was only once in Heidelberg But once he took part in combined literary work, when from 1875 to 1878 he edited the German edition of *Knapp's Archives*, which I edited for three years subsequently.

He has displayed a great fertility as a writer. Untiring diligence, depth and a peculiar style were his attributes, although by his dialectic intellect he sometimes allowed himself to be led to paradox views.

The first work was his text-book of ophthalmoscopy in 1868 (468 pages), the first extensive one, with exact literary reference, and to this date comparatively the most complete one. His second work, lectures on the optical errors of the eye (Vienna, 1876; 878 pages), contains a vast amount of historical researches and personal investigations from the time of Innsbruck, with the most vivid description of an apparently dry subject. After his return to Vienna Mauthner began to publish an extensive series of monographs with the title of: Lectures from the whole field of ophthalmology for students and physicians. Of these have appeared: Functional examination, the sympathetic affections of the eye, brain and eye, glaucoma, paralyses of the ocular muscles. The theory of color-perception, the first part of the functional examination, has appeared in a second, greatly changed edition, but a few weeks ago.

In personal contact Mauthner was one of the most intellectual and humorous men, with whom it has been my fortune to become acquainted. No one, who came in closer relationship with him will ever forget him. Ophthalmology, in him, has lost one of her best representatives.

THE AMERICAN JOURNAL

OF

OPHTHALMOLOGY.

VOL. XI. ST. LOUIS, MO., JANUARY, 1894. No. 1.

Edited by ADOLF ALT, M.D.,
3036 Locust Street, St. Louis, Mo.,

IN CONJUNCTION WITH

DR. S. C. AYERS, Cincinnati.
DR. F. BULLER, Montreal.
DR. B. E. FRYER, U.S.A., Kansas City.
DR. J. GREEN, St. Louis.
DR. E. GRUENING, New York.
DR. F. C. HOTZ, Chicago.
DR. L. HOWE, Buffalo.
DR. CH. J. KIPP, Newark.
DR. SWAN M. BURNETT, Washington.
DR. T. R. POOLEY, New York.
DR. J. S. PROUT, Brooklyn.
DR. A. SCHAPRINGER, New York.
DR. G. STRAWBRIDGE, Philadelphia.
DR. S. THEOBALD, Baltimore.
DR. W. THOMSON, Philadelphia.
DR. S. J. B. VERMYNE, New Bedford.
DR. O. F. WADSWORTH, Boston.
DR. D. WEBSTER, New York.

CONTENTS:

ORIGINAL ARTICLES.

Amblyopia from Suppression of the Visual Image.—WALTER B. JOHNSON, M D 1
Concerning Exophoria.—JOHN DUNN, M.D. 7

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Neoplasm of the Iris 17
Benzoyl-Pseudo-Tropeine as a Local Anæsthetic in Ophthalmic Surgery 17
Spontaneous Rupture of Capsule after Iridectomy Preliminary to Cataract Extraction 18
Extreme Hyphæma of Both Eyes with Corneal Abscess of Right Eye Occurring as a Sequella of Small-Pox 18

SELECTIONS.

Legislation in the United States for the Prevention of Blindness 20
Concerning Mild Conjuntival Inflammations and Their Local Treatment 29

NEWS.

The International Medical Congress 32

TERMS, PER YEAR, - - - - - $3.50.

J. H. CHAMBERS & CO.,
PUBLISHERS AND DEALERS IN MEDICAL BOOKS,
914 LOCUST STREET, ST. LOUIS, MO.

Entered at the Post-Office at St. Louis, Mo., as Second-Class Matter.

World's Tribute to
Chas. Marchand's
Peroxide of Hydrogen
Medicinal.

Highest Award,
Both Medal and Diploma.

Chicago 1893

Avoid Substitutes
Prescribe only
in original, unbroken
Packages
1lb. ½lb. ¼lb. Bottles
Not Sold
in bulk
Send for
Free book of
118 Pages.
Physicians
Remitting
Express
Charges
will
Receive
Free Sample.

World's Fair
Medal and Diploma
awarded to
Marchand's Peroxide of Hydrogen
H_2O_2 (Medicinal.)

CURES ALL DISEASES CAUSED BY GERMS:

DIPHTHERIA, CROUP, SCARLET FEVER, SORE THROAT, QUINSY, CATARRH OF THE NOSE, OZŒNA, HAY FEVER, BRONCHITIS, ASTHMA, WHOOPING COUGH, INFLUENZA, PNEUMONIA, CONSUMPTION, CATARRH OF THE STOMACH, SMALL-POX, TYPHUS, TYPHOID FEVER, YELLOW FEVER, CHOLERA, OPEN ABSCESSES AND CARBUNCLES, WOMEN'S WEAKNESSES: WHITES, LEUCORRHŒA, ETC.

Chas. Marchand's Peroxide of Hydrogen (Medicinal) is sold only in 4-oz., 8-oz., and 16-oz. bottles, bearing a blue label, white letters, red and gold border, with his signature.

PREPARED ONLY BY Charles Marchand

Chemist and Graduate of the "Ecole Centrale des Arts et Manufactures de Paris" (France).

☞ Mention this publication.

SOLD BY LEADING DRUGGISTS.

Laboratory, 28 Prince St., New York.

PALPEBRINE

A RELIABLE OCULAR ANTISEPTIC AND REMEDY IN ALL EXTERNAL EYE DISEASES ESPECIALLY THOSE OF THE CONJUNCTIVA OF THE EYELIDS.

PALPEBRINE Is not a SECRET remedy, and in offering it to the Profession we give the formula in full. It contains no unknown and untried agents, but is composed of the following well-known drugs which will commend it to the practitioner at once.

FORMULA AND MEDICAL PROPERTIES.

ACIDIUM BORACICUM, (an Antiseptic)	Two per cent.
HYDRAGYRUM BICHLORIDUM, (an antiseptic and irritant)	One part in 5,000.
ZINCUM SULPHURICUM, (an irritant astringent)	One part in 1,000.
GLYCERINUM PURUM, (an irritant)	One part in 10.

EYE DISEASES are the best and most fruitful field for quackery, and the amount of harm being done by QUACKS and PATENT MEDICINES in eye diseases is fearful to behold. In offering PALPEBRINE to the profession we wish to give to the oculist and general practitioner a reliable and safe remedy, easily prescribed, of known qualities and quantities. We are certain after a trial our efforts will be appreciated.

The physician can safely rely upon this preparation instead of using a doubtful remedy in external eye diseases. Its antiseptic properties render it especially valuable in surgical operations, also in gonorrhœic and purulent conjunctivitis.

To any physician, unacquainted with the antiseptic effects of PALPEBRINE, we will mail a pamphlet containing full information; or, to physicians desiring to try PALPEBRINE, we will, on receipt of 50 cents, mail bottle, charges prepaid.

DIOS CHEMICAL CO., ST. LOUIS, MO., U. S. A.

SPECIAL NOTICE!!!

Medical Books.

Our facilities are such that we can furnish any Medical Books to the Profession at Lowest Prices. IT WILL PAY to correspond with us before making your purchases

J. H. CHAMBERS & CO.,

Publishers and Dealers in Medical Books,

914 Locust Street. - ST. LOUIS, MO.

NOW READY!

SECOND EDITION OF A TREATISE ON

OPHTHALMOLOGY,

FOR THE GENERAL PRACTITIONER.

BY ADOLF ALT, M.D.

As the first edition of this well-known book, the second one is written for the use of the general practitioner.

It is greatly enlarged and newly illustrated in order to meet the requirements of the day.

The minute details, of possible interest only to the Specialist, are omitted to give place to a

PRACTICAL AND COMPREHENSIVE EXHIBIT

of the principles of Ophthalmology and practice most *necessary* to be known and observed by the GENERAL MEDICAL PRACTITIONER, to whom it is a guide which, if closely followed, will point out when and how the eye may be safely and successfully treated by physicians who are not specialists but general practitioners. To the student of medicine the book will be more useful than others of larger size, and full of embarassing details.

TO THE MEDICAL LIBRARY,

the work will prove a reference book of incalculable value. Its practical character makes it at once a necessity and a pleasure to possess.

THREE HUNDRED AND FORTY-SIX pages, with ONE HUNDRED AND FORTY Practical Illustrations. Neatly bound in cloth. Price $3.50. Mailed postpaid to any address on receipt of price.

J. H. CHAMBERS & CO., Publishers and Dealers in Medical Books,
914 Locust Street, St. Louis, Mo.

SERIAL

RE
1
A5
v.11

American journal of ophthalmology

GERSTS